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Downsizing effects: a Portuguese evidence

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Downsizing effects: a Portuguese evidence

Tânia Marques

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Los Drs. D^a. Isabel Suárez González y D. Pedro Filipe Pereira Pinheiro da Cruz, como Directores de la Tesis Doctoral "*Downsizing effects: a Portuguese evidence*" realizada por D^a. Tânia de Matos Gomes Marques en el Departamento de Administración y Economía de la Empresa de la Universidad de Salamanca, autorizan su presentación a trámite, dado que reúne las condiciones necesarias para su defensa.

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Fdo.: Isabel Suárez González



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INTRODUCTION

Motivation for the study and relevance

The decisions of where to compete, in which industry(ies) and how to achieve growth are the main concern of the corporative strategies regarding the company's actuation (Porter, 1980; Grant, 1995).

The natural evolution of the worldwide History has lead companies to adopt distinct strategies. Two main strategies, concerning diversification and restructuring, can be identified in the literature from de 50's until nowadays (Table 1).

Table 1: Corporative strategies from the 50's until the 90's

Period	Corporative strategies
1950 – 1960	Diversification: - Relational - Conglomerate
1970	
1980	Restructuring: - Refocusing - Downsizing
1990...	

Source: Adapted from Suárez, 1999.

After the Second World War firms followed the internationalisation strategy to new markets but specially the diversification strategy of their business. An example of that is the American case presented by Rumelt (1974). The intents of diversification of the 50's-70's changed to refocus plans, and firms specialized themselves in their core businesses, as evidenced in Markides (1991). Also, firms have decided to downsize in order to reduce their size. They decided to close plants, disinvest and outsource some external services. The cost reduction was assumed as a primordial goal and, for that reason, companies reduced some organizational levels. The attempt to implement the

total quality management is other example of how to achieve the costs reduction. These instances represent the effort to be made so as to get the adequate size of firms accomplished with the downsizing.

The 60's and the 70's were a period in which the main focus was the firms' growth. Mergers and acquisitions were in vogue. But it also was a period affected by the oil crisis. Firms needed to increase their competitive position in their industry and, thus, they rethought their strategies, since results were decreasing and the use of resources, in other businesses more distant than the original ones (owing to the diversification strategy), was not achieving the finest results. Studies pointed a curvilinear relation between diversification and performance (Palich *et al.*, 2000). The next period, the 80's, was characterized by the need of a more flexible and agile, smaller and less red tape firm, able to respond quickly to the new information era's challenge. This new environment demanded an adequate size of firms in order to become competitive. The 80's were also characterized by the creation of value for the stockholders (Jensen, 1993). Managers faced the stockholders' disappointment with respect to the undesirable results (Donaldson, 1994) and were accused of inefficiency due to the unsatisfactory results.

It is a fact that firms have been making an effort (for several decades) to grow their business lines and to engage in diversification. Although, from the eighties on, this trend changed and firms, despite of diversification, began to adopt some organizational restructuring strategies and focusing in the reduction of their size and/or scope. The strategic management field explains this new trend. However, the particular case of the size reduction is accompanied by a workforce reduction, which holds the human

resource management field as its theoretical support. By one side, firms rethink their strategy and, by the other side, there it is an attempt to manage their Human Resources, both in order to become competitive. The restructuring strategy and these research fields are the bases of this study.

The referred new 80's environment and the new desires of firms and stockholders leded firms to restructure themselves following the indications that restructuring can be performance-enhancing for the firm (Bowman and Singh, 1993). The organizational restructuring is one of the possible restructuring strategy pointed by Bowman and Singh (1993), which means rapid and significant changes in the structure and organizational processes, several times assuming the downsizing or workforce reductions forms.

Every day, common people, employees or managers, are confronted with news about plants closure, anticipated jubilation or lay-offs. Terms as *downsizing - an intentional effort to permanently reduce personnel in order to improve organizational efficiency and/or effectiveness* (Cameron *et al.*, 1993; Freeman and Cameron, 1993) - are often used. The mixed consequences at the profitability, stock market value or individual levels are usually discussed and there is not a consensual state of art of the effectiveness of the downsizing strategy. Both, the profitability and the stock market research field reveal mixed and controversial results. Some studies showed some evidence that downsizing decisions are associated with the increase in the profitability ratios of the companies (Bruton *et al.*, 1996; Chalos and Chen, 2002; Kang and Shivdasani, 1997). Some other researchers concluded that the companies which implemented these programs do not obtain significant superior results in comparison to those companies that choose not to use these programs (Cascio, 1998, Morris *et al.*, 1999). Furthermore,

in a few studies, we can find negative effects as a consequence of these programs (Suárez-González, 1999, De Meuse *et al.*, 2004, Carswell, 2005). Due to the inconclusive results, a meta-analysis is required to complement quantitatively previous studies.

Concerning the effects of downsizing on the stock market value, once again results are inconclusive. The market reacts in a different way according to the layoffs' causes. The negative reaction is due to the reactive character of downsizing indicating a signal of a serious crisis (Hillier *et al.*, 2007; Worrell *et al.*, 1991). The positive reaction has to do with the strategic character of downsizing (Davidson *et al.*, 1996, Chalos and Chen, 2002).

The only research field where there are consensual conclusions is related to the worker. Literature provides evidence of the negative consequences driven from downsizing. The employees who are not dismissed (Brockner *et al.* 2004) are harmfully affected at distinct levels by downsizing: 1) the psychological state which reflects on job insecurity (Sahdev, 2003), morale (Mishra, 1996) or stress (Gregory, 1999); 2) the attitudinal level with manifestation on their satisfaction (Wagar, 1998), commitment (Ugboro, 2003); 3) some behavioural consequences like lower motivation (Mishra, 1996) or innovative behaviours (Sahdev, 2003). Research on downsizing strategies has also highlighted that large firms often do not take into account the hidden (Fisher and White, 2000), or unanticipated (McKinley and Sherer, 2000) large term costs of downsizing derived from its negative effects on human and social capital.

International news reveal this reorganization trend of downsizing. The U.S. context has been largely studied due to the strong incidence of this practice in the American context. The European case, especially the strong and powerful economies, like that of the United Kingdom, France or Germany, has also devoted a great attention to the downsizing trend. Smaller economies, like Spain or Portugal are also embedded in it. The Spanish researchers already gathered some scientific evidence regarding the downsizing reality. However, Portugal suffers from the inexistence of empirical studies on its reality. However, Portugal suffer from the inexistence of empirical studies on its reality, the published data, presented in the website from “*Direcção Geral do Emprego e das Relações de Trabalho – DGERT*”, in the bulletin of “*Direcção Geral de Estudos, Estatística e Planeamento, do Ministério do Trabalho*”, reveal that just in the first nine months of 2007 the number of firms which implemented lay-offs is 120, a higher number than that of firms that implemented it in 2006 (116). The total affected workers reach 14969, 42% more that in 2006.

The most common reason that supports these practices has to do with performance issues, mainly with the intention to reach a better financial position. But, a simple question arises: what about the Portuguese reality on the subject?

Concerning the empirical evidence, even though several authors had studied the theme, Yu and Park, 2006 studied the Korean situation, Carswell, 2005 studied the New Zealand case, Farrell and Mavondo, 2005 focused on Australia, Suárez-González, 1999 centred on the Spanish reality, Espahbodi *et al.*, 2000, Wayhan and Werner, 2000 or Cascio *et al.*, 1997 studied the American reality, there is no single scientific study in Portugal about the downsizing practice.

Our main objective is to analyse the Portuguese situation concerning the downsizing reality and its effects. We intend to range from the profitability effects to the individual ones, since this is a totally unknown field in the Portuguese economy.

To achieve our objective, we start with a detailed revision of the state of art of the downsizing effects, in both qualitative and quantitative terms, this last issue concerning the profitability effects. The organizational (profitability, stock market), the individual and other parallel effects are reviewed in the first chapter with the intention of planting the seed for the next chapters. The second part of this study concerns the main issue of the advocacy of downsizing: the improvement of the firms' profitability. We verify if this assumption is applicable to the Portuguese context. Furthermore, we will try to confirm, on chapter III, if the hidden costs follow the negative trend of prior studies concerning the individual level or not.

In each of the chapters we support this theory with the empirical strength. Different and actual methodologies were adopted in order to be more conclusive. We complement the qualitative state of art revision with a meta-analysis related to the profitability effects. Also we applied a variance analysis in the second part so as to reach some conclusions on the downsizing effects on the profitability measures taken by the Portuguese firms. And, since we analysed simultaneous relations of constructs like: job insecurity, lack of organizational commitment and innovative behaviours, as well as the consequences of downsizing on workers, the most suitable methodology to be used seems to be the structural equations modelling, a methodology we decided to adopt in our third chapter.

With this study, we expect that the Portuguese firms and their managers can count with an empirical and effective support to their future downsizing decisions and may reach strong and valid conclusions about the effectiveness of these workforce reductions by the firms that decided to implement it in the past years. It should be a blueprint for assessing downsizing practices.

Dissertation Structure

This dissertation is based on three research chapters. The first chapter outlines the literature review on the downsizing phenomena, including a meta-analysis to complement the qualitative with the quantitative literature review. An introduction, the definition and the effects are presented. Organizational and individual effects are also presented, being the organizational ones separated into three distinct groups: on profitability, on stock market value performance and other effects. The review delineates the inconclusive state of art of the downsizing effect research field on profitability (Farrell and Mavondo, 2005; Chalos and Chen, 2002) and on the stock market value, with negative (Elayan *et al.*, 1998) and positive effects (Ballester *et al.*, 1999) obtained in distinct studies.

Due to inconclusive evidences and since the studies about the downsizing effects on profitability mainly adopt mean differences methodology, opens the possibility of a meta-analysis procedure. A quantitative literature review of the downsizing effects on profitability is presented trough this methodology. Conclusions, management implications as well as limitations and future research end this chapter.

While chapter I is a literature review, in qualitative and quantitative terms, Chapter II and Chapter III are empirical, thus being supported by Chapter I.

The second chapter is related to the downsizing effects on the financial performance of Portuguese companies along the period 1993 – 2005. After a brief introduction, the Portuguese official reality is presented. Some official data are presented, justifying the existence and the importance of this phenomenon in Portugal, similarly to the U.S. and European trends. The theoretical background on the relation between downsizing and profitability, under the economic perspective, is outlined. After presenting the hypotheses, it is time to explore the methodology issue. So, the objective, together with some data, samples and variables are described. Two main groups of Portuguese firms were studied: those that downsized their workforce at least once (DOWNSIZERS) and those that did not (NO DOWNSIZERS) for a thirteen-year period. Some descriptive statistics of the sample and a variance analysis were carried out. Analyses of the effects on the profitability measures, Return on Assets and Profit Margin are made and conclusions appear next. Management implications, limitations and future research are presented right before the references.

This dissertation ends with the third chapter, which empirically studies the moderate effect of downsizing practices on innovative behaviour. The causal relations between some of the effects of downsizing, such as perceived job insecurity, lack of organisational commitment and their relation to the innovative behaviour are analysed. After the introduction, the theoretical background on the individual effects of downsizing on the three referred constructs is presented. Key concepts and hypotheses are also given. We develop a model of how downsizing influences the perceived job

insecurity and lack of commitment, plus their relation to the innovative behaviour of workers. Then, data and measures are discussed. We collected data from four Portuguese companies, with some major differences and specificities between them, according to their condition of DOWNSIZER or NO DOWNSIZER firms. In order to analyse if the company that implemented downsizing manifests significant distinct impacts in those which did not implement downsizing, we have also made a multi-group analysis. Results are presented prior to the conclusions. Management implications, limitations and future research appear right before the references, and that is where the third chapter comes to an end. The present study ends with a general conclusion and some relevant appendices.

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CHAPTER I

THE DOWNSIZING PHENOMENA

1.1 INTRODUCTION

The purpose of this section is to make a literature review on the latest academic findings, considering the consequences of downsizing, concerning qualitative and quantitative terms. The aim is to plant the seeds for the empirical sections that follow. The underlining research issue of this essay is to focus on whether downsizing is indeed a successful strategy for companies to achieve future growth or not. This chapter is divided into three main sections: the downsizing definition, a section focused on the theoretical background and a quantitative review adopting a meta-analysis methodology. In the theoretical background part, an approach is made to the downsizing effects at distinct levels: organizational effects (on profitability and on stock market value performance) and other related effects. The other main level is related to the individual effects (on individuals) and, in the end, conclusions are presented. Future research lines and some limitations are also presented.

1.2 DOWNSIZING DEFINITION

One of the literature problems is that several authors and managers use the term downsizing without a concrete definition. There is no agreed definition of what constitutes downsizing (Carswell, 2005). This generates some confusion, and that is why this definition should be revised.

The adjustment on employment size can be done in several forms, such as: cut off, close plants, anticipated reform programs, early retirement programs or simply with the freeze

on new contracts (Davidson *et al.*, 1996). These variations in the volume of employment are presented in a bigger organizational restructuring, envisaging a more flexible organization, with agile decisions in a turbulent environment. Terms as declining, retrenching, resizing or renewing, amongst others, are used in spite of downsizing (Cameron, 1994). On the other hand, in some cases, there is a difference between downsizing in a restrict sense or in a large sense (Wayhan and Werner, 2000). In the “restrict sense” the act of downsizing consists of a planed reduction in the number of employees of the organization. It is a synonym for “cut off”. In a large sense, it is defined as a selective reduction of the organization resources (Dewitt, 1998), and this includes the phenomena of disinvestments and asset reduction. Downsizing is often defined in the literature as an intentional effort to permanently reduce personnel in order to improve organizational efficiency and/or effectiveness (Cameron *et al.*, 1993; Freeman and Cameron, 1993).

The organizational restructuring can be one of the five restructuring strategies pointed by Bowman and Singh (1993). It is considered a organizational restructuring when there are some rapid and significant changes in the structure and organizational processes, several times assuming the downsizing or workforce reductions forms. Mirabal and DeYoung, (2005), based on Cummings and Worley (2001), presented three downsizing tactics: workforce reduction (for example: attrition, layoffs, retirement incentives, among others), organization redesign (for example: merging units, eliminating functions, redesigning tasks, among others) and systemic redesign (for example: changing responsibilities, fostering continuous improvement, among others).

Cameron (1994, pp. 192) offers one of the most cited definitions on downsizing: “set of activities, undertaken on the part of the management of an organization and designed to improve organizational efficiency, productivity and/or competitiveness(...). It represents a strategy implemented by managers that affects the size of the firm’s workforce, the costs, and the work”. According to this definition, we will consider, in this study, all those studies that, despite of using other terms than downsizing, are analysing the company’s decisions of reducing the size of their workforces.

Despite the confusion, there is a consensus regarding the characteristics of the phenomena (Carswell, 2005). First of all, downsizing is something intentional. Secondly, it often results in a net decrease of the workforce. And thirdly, the increase in profitability, as a downsizing result, is implied or explicit in several definitions.

1.3 THEORETICAL BACKGROUND

Downsizing has been a major organizational trend since the early 80’s (Love and Nohria, 2005). From that period on, the firms’ decision of reducing the number of employees or downsizing began to assume a very important part of their history on developed countries. Several international companies are involved in restructuring plans all over the world¹. It is a phenomenon that had strongly affected the American economy (Wayhan and Werner, 2000).

According to the *Bureau of Labor Statistics*, the downsizing activities had exceeded two million job cuts in the years 2001 and 2002, just in the United States of America (De

¹ Like General Electric, General Motors, Fujitsu, American Airlines, or IBM, between others.

Meuse *et al.*, 2004). This occurred, not only in the United States, but also in Europe (Filatotchev *et al.*, 2000; Kase and Zupan, 2005) and in the Southeast Asia (Lee, 1997; Ahmadjian and Robinson, 2001; Yu and Park, 2004). Australia was also affected by this downsizing strategy (Farrell and Mavondo, 2005) and it is a fact that workforce reductions were a dominant feature of firms behaviour in Australia during the 1990s (Littler and Innes, 2003).

In an attempt to cope with the Korean financial crisis of 1997, many firms implemented downsizing strategies. In the period between January 1997 and October 1998, 53% of the firms surveyed 224 publicly traded firms in Korea, which downsized their workforces through two types of downsizing: honourable retirement (similar to early retirement) and/or layoff (Yu and Park, 2003).

Spain was also affected by this trend. Between 1989 and 1994, almost 50% of large firms reduced their employee number in 31%, in mean terms (Suárez-González, 1999) and between the years 1995 and 2001 it was possible to identify 354 downsizing announcements in the press (Sánchez and Suárez, 2005). These and other studies (Suárez and Vicente, 2000; Magán and Céspedes, 2005) showed the remarkable incidence of these practices in Spain.

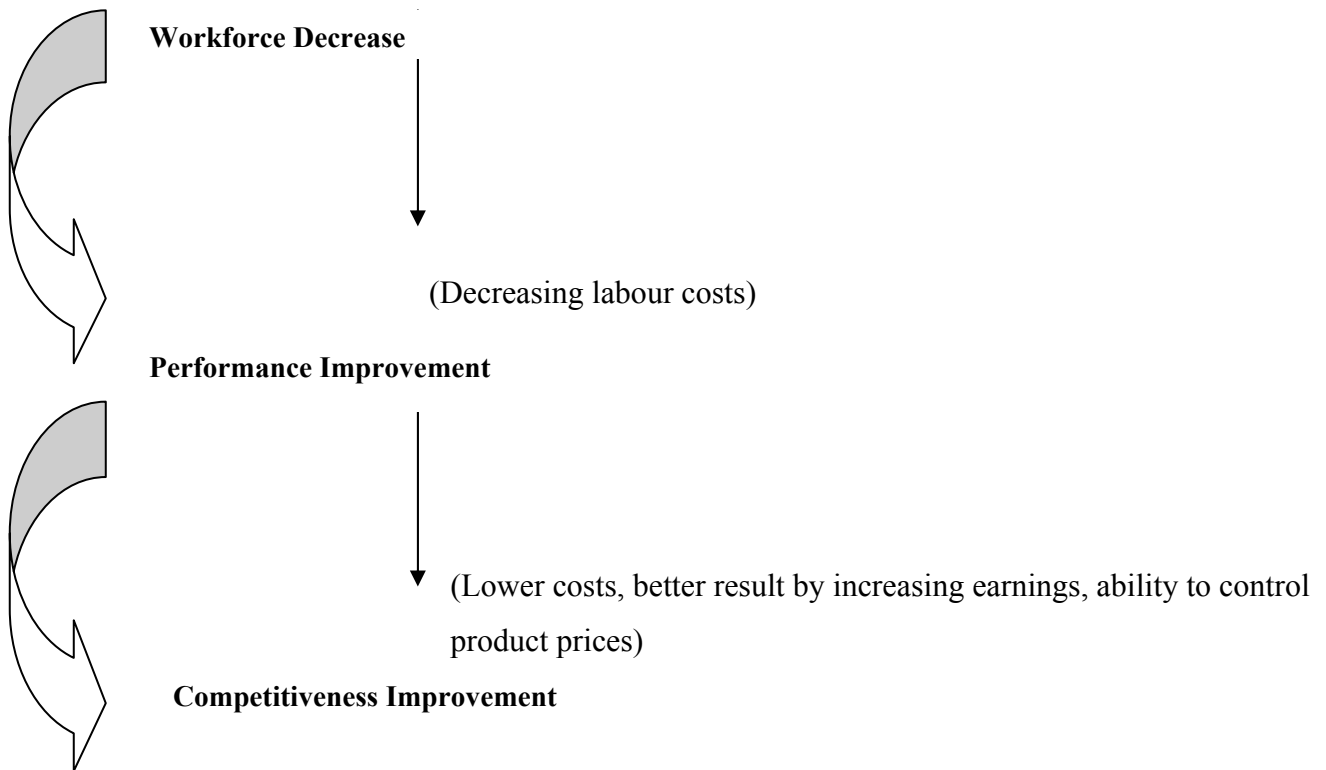
Even though it represents a generalized phenomenon in developed countries, downsizing also occurs in several activity sectors. Not only it affected industrial or manufacturing companies (the most studied sectors in empirical studies), but also hospitals and health services (Davis *et al.*, 2003; Chadwick *et al.*, 2004; Rondeau and Wagar, 2001) or armed forces (Toth, 2001).

We should regard that not only the companies with financial problems have implemented these downsizing practices. Today, it is frequent that healthy financial companies approve restructuring plans.

We can observe that downsizing is a phenomenon which affects quite a lot of employees and companies, in several countries and activity sectors, and that is a reason why we should study its impact and consequences.

The main objective of these practices is to reach better corporate financial results (Bruton, *et al.*, 1996). Many managers consider employee layoffs as a strategy for reducing costs and improving financial performance of their firms (Shah, 2007). However, if downsizing actually improves firms performance (or not) has been a central question in the downsizing literature (Love and Nohria, 2005). We can presume that reducing the employee number and diminishing the personal costs has a positive impact on the profitability (lower costs, increasing of results) and in the competitive capacity (reduction of prices) (Cascio *et al.*, 1997) (see Figure 1.1).

Figure 1.1: Expected results of downsizing



Source: Adapted from Cascio *et al.*, 1997

Although, it is not clear that companies that implemented downsizing practices had reached the expected results. The reality is that profitability does not necessarily follow the downsizing practices (Carswell, 2005). The question is: are those results being or not being reached? Although we are talking about a phenomenon that is recent and that constitutes an issue in our days, this question has been object of an increased interest and of several empirical studies. Though, the evidence about the impact of downsizing in the financial results is not conclusive (Farrell and Mavondo, 2005; Chalos and Chen, 2002).

Different works had come to different conclusions: in a few studies there is an increase in the results, but in others the reverse happens and the financial variables get worst. Other studies concluded that the downsizing decisions have no significant effect in companies' results. Latter, we will develop the effect issue (see tables 1.1 and 1.2).

1.3.1 Downsizing effects

When we refer to the downsizing effects, the first thing that we should take into account are the different levels that they refer to. We will distinguish, in first place, those studies that referred to organizational effects: empirical studies that referred to these effects on the profitability (accounting variables), studies that analysed the announcement effect on the stock market value and other effects. In second place, we will present studies that referred to downsizing effects on individuals.

1.3.1.1 Organizational effects:

1.3.1.1.1 Effects on financial performance (profitability)

Although the downsizing literature is growing, there are some articles that study its impact on profitability measures (Carswell, 2005). Table 1.1 presents those studies that are focused in the downsizing effects on profitability, based on the accounting information. Similarly to those studies that are focused on the stock market reaction, those who analyse the consequences in terms of profitability also present controversial conclusions.

Layoffs represent one of the many restructuring possibilities to cut costs, improve operating performance, refocus on core activities and improve employee efficiency (Shah, 2007). Despite the existence of some evidence that downsizing decisions are associated with the increase in the profitability ratios of the companies (Bruton *et al.*, 1996; Chalos and Chen, 2002; Kang and Shivdasani, 1997), in several cases it is concluded that the companies which implemented these programs do not obtain significant superior results in comparison to those companies that choose not to use these programs (Cascio, 1998; Morris *et al.*, 1999). Also, in a few studies, we can find negative effects as a consequence of these programs (Suárez-González, 1999; De Meuse *et al.*, 2004, Carswell, 2005).

Non significant effects

Some firms that downsized their workforces do not obtain significant superior results in comparison to those companies that choose not to use these programs (Cascio, 1998; Morris *et al.*, 1999).

Their significance level do not allowed their author(s) to conclude that as a downsizing result, profitability increased or decreased. Companies that implemented downsizing did not achieve the desirable effect of downsizing once results indicate that none of the financial measures were significantly affected by it. Authors did not find any “significant and consistent evidence that employment change led to improved financial performance” (Morris *et al.*, 1999, pp. 84).

Negative effects

However, distinct studies presented negative effects as a consequence of downsizing programs (Suárez-González, 1999; Carswell, 2005; De Meuse *et al.*, 2004; Farrell and Mavondo, 2005). Despite of different features in their studies, both contexts, Spanish and New Zealand, reported lower measures of profitability of respondents or firms that implemented downsizing. It emerges that downsizing that drives redesign (reducing workforce size) had a negative impact on business performance (Farrell and Mavondo, 2005).

Positive effects

Conversely, in several studies like those of Bruton *et al.* (1996), Farrell and Mavondo (2005), Chalos and Chen (2002) and Kang and Shivdasani (1997) is concluded that downsizing strategies had a positive effect on companies' profitability ratios. Farrell and Mavondo (2005) concluded that the redesign that drives downsizing (redesigning tasks, etc) had a positive impact on business performance. The Japanese manufacturing case showed improvements in the operating performance after downsizing when compared with an American sample in the study of Bruton *et al.*, (1996).

When different types of downsizing are examined, revenue refocusing (emphasizing the firm's core competencies), cost cut (maintaining the firm's product scope and focusing on productivity gains and cost reduction) and plant closure, some of them are better solutions than other. It is the case of the downsizing by revenue refocusing that had had significantly positive market returns, despite of being relatively small, and this strategy is more successful than the cost cut strategy, once it has significantly superior ROA (Chalos and Chen, 2002).

Some studies focused on how the downsizing could be more effective respect to its results. The degree to which downsizing will improve firm performance is contingent on conditions under which the downsizing occurs (Love and Nohria, 2005). If downsizing is proactive, with a broad scope and when firms have high slack, downsizings are more likely to reach better performances. Also a more strategic approach to human resource management is desirable and would lead to improved company development (Kase and Zupan, 2005).

After reading these studies, as an initial point we should regard that this group of empirical works is involved in heterogeneity, in the adopted methodology, increasing the difficulty in reaching a consensual conclusion from the empirical evidence. On the one hand, there are differences in the methodology research design to identify those companies that had implemented layoff programs. There are studies that define their sample from the announcements in press, specially those that are referred in the next chapter (De Meuse *et al.*, 1994; Kang and Shivdasani, 1997; Chalos and Chen, 2002), there are others that define the sample with a survey (Farrell and Mavondo, 2005; Yu and Park, 2004), or from secondary sources calculating the negative variations in the employment volume (Cascio *et al.*, 1997; Suárez-González, 1999). In this last situation, the downsizing is defined when the reductions in the employees are more than 3% or 5% (Cascio *et al.*, 1997; Suárez-González, 1999; Suárez-González, 2001). As regards the dependent variable, in all the studies the corporate results are measured with accounting information, but the accounting ratios used are different: return on assets (ROA), return on equity (ROE) or return on sales (ROS), but also some measures of efficiency and productivity. At last, there are combined regression methodologies where

the downsizing is the repressor of the results, controlled by others variables (Bruton *et al.*, 1996; Mentzer, 1996; Kang and Shivdasani, 1997; Krishnan and Park, 1998), with analysis of mean differences, comparing groups (profitability of the companies that implemented downsizing and those who did not) or in different moments of time (before and after the implementation of these actions). Some examples are the studies of De Meuse *et al.*, 1994; Suárez-González, 1999 or Chen *et al.*, 2001.

Through the literature, we may conclude that the reactive downsizing as a response to financial problems does not seem to reach the desirable increase in the results, once that downsizing has a more positive influence in the financial performance of those companies that have not experimented financial crisis than in those who have. One of the reasons seem to be that the downsizing is more effective when it is done with a proactive character than when it is with a “quick solution” to a financial problem (Yu and Park, 2004).

On the other hand, when the reductions in the plant employees are part of a more global strategic plan, their effects seem to be more positive. The downsizing will not succeed if it is the only strategy adopted: it must be a complementary action to changes in work processes, investments in HH.RR. (Krishnan and Park, 1998) and also to significant changes in the assets. In those cases where these restructuring actions are combined, companies reach a higher profitability than the mean of their industry (Cascio *et al.*, 1997). Also, a more strategic approach to human resource management would lead to improved company development (Kase and Zupan, 2005).

All the presented literature has a positive contribute by studying the downsizing effects, although the heterogeneity between them when they try to give different approaches and adopt distinct methodologies. Although a main and global conclusion can be made: downsizing must be viewed as an element of a global process, and not an isolated action.

Table 1.1: Downsizing impacts on profitability

<i>Author(s)</i>	<i>Sample</i>	<i>Period / Country</i>	<i>Sign</i>
De Meuse <i>et al.</i> (1994)	52 companies	1987-1991/ USA	+ 1 st year – 2 nd year
Bruton <i>et al.</i> (1996)	100 companies	1985-1987/ USA	+
Mentzer (1996)	82 to 122 companies	1986-1994/Canadá	*
Cascio <i>et al.</i> (1997)	537 companies	1980-1994 USA	+
Kang and Shivdasani (1997)	92 companies	1986-1990/Japan (comparing with 114 American companies)	+
Krishnan and Park (1998)	76 companies	80's USA	*
Cascio (1998)	311 companies	1981-1990/ USA	*
Suárez González (1999)	297 companies	1989-1994 /Spain	-
Espahbodi <i>et al.</i> (2000)	118 companies	1989-1993/ USA	+
Wayhan and Werner (2000)	250 companies	1991-1992/ USA	+
Chen <i>et al.</i> (2001)	290 companies	1990-1995/ USA	+
Chalos and Chen (2002)	365 companies	1993-1995/ USA	+
Morris <i>et al.</i> (1999)	5417 companies	981-1992/ USA	*
Morrow <i>et al.</i> (2004)	1500 companies	1980-1995/ USA	+
			-
De Meuse <i>et al.</i> , (2004)	92 companies	1987-1998/ USA	-
Yu and Park (2004)	258 companies	1997-1999/Korea	+
Yu and Park (2006)	258 companies	1997-2002/Korea	+
Carswell (2005)	155 companies with 50 or more employees	1997-1999/ New Zealand	-
Farrell and Mavondo (2005)	2000 manufacturing companies	Annual revenue, Australia	+
			-
Kase and Zupan (2005)	Manufacturing companies (more than 100 employees)	1997-2002/Slovenia	+
Love and Nohria (2005)	100 large industrial firms	1977-1993/ USA	+

* Without proved relation. Not significantly affected.

1.3.1.1.2 Effects on stock market value performance

There is another group of studies that referred to the downsizing effects in the stock market value or in the variation of the stock prices (see Table 1.2: Downsizing impacts over stock market value results). All of them have one thing in common: the fact that they are based in events studies - the very used methodology in accounting, finances and in management as a “powerful tool that can help researchers assess the financial impact of changes in corporate policy” (McWilliams and Siegel, 1997, pp. 626). It allows determining if there is or if there is not an abnormal stock price effect associated with an unanticipated event (in our case, an endogenous event, the downsizing announcement). The idea is to measure the investor’s expectations on the event consequences over the companies that are being studied. The main advantage here is that the consequences over the companies are measured in terms of the variations in the market value, a measure that is supposedly more approximated than the accounting ratios to the objective of the value created to the stockholder. However, it is difficult to nail down those effects from stock market reactions due to the fact that several other external variables affect capital market performance in firms (Yu and Park, 2006).

If we pay attention to the table 1.2, it appears to be clear that there is definitely no evidence that the downsizing announcement has beneficiated stockholders. Actually, the simple countdown of the studies shows that these decisions had had a negative impact: whereas in the majority of the elected studies there is a negative general effect, in a few studies there is a positive effect. The basic idea is that the downsizing effects could be different according to the specific characteristics of the downsizing (that is to say: the modality, the kind of situation the company is in, and if there has been a strong cut off

or a few short cut offs along the time, etc). The market reaction to layoff depends on the information set available to shareholders and on the financial performance of the firm before the announcement (Elayan *et al.*, 1998). Although they constitute a very poor number, studies about the anticipated reform programs (Davidson *et al.*, 1996), in general, seem to be more valued by the market than the adjusts in the workforces by massive layoffs.

Negative effects

The market reacts in a negative way when the layoffs look like they have only financial causes like a reactive character of downsizing to poor financial conditions. (Hillier *et al.*, 2007), once that poor financial results before the announcement indicate problems and the layoffs can be seen as a sign of a serious crisis (Worrell *et al.*, 1991; Iqbal and Sekhar, 1995; Lee, 1997; Elayan *et al.*, 1998; Wertheim and Robinson, 2000).

There are mainly two reasons why a company might lay off their employees: financial distress or restructuring/consolidation and investors react negatively to announcements that had financial reasons and permanent or large layoffs had stronger negative effects (Worrell *et al.*, 1991).

We must be careful when we attribute the downsizing to firms with a weak financial situation. Healthy companies also downsize their workforce in order to become more competitive. Stockholders react unfavourably to layoffs, but their perceptions are contingencial on the firms' financial position. Healthy companies have a negative return and smaller than that from the weak ones (Iqbal and Shekhar, 1995).

Wertheim and Robinson (2000) presents an alternative approach to the one used in Worrell *et al.*, 1991 and in Iqbal and Shekhar (1995). They also studied the firms' financial condition on the market reaction to company layoffs. This study instead of considering that financial distress and potential benefit hypotheses are mutually exclusive, they considered that these two hypotheses are important too, and simultaneously explain the layoffs effects on stock prices. Those firms with financial problems have a more negative market reaction than those who do not face this kind of difficulties. When the market reaction is positive, it is more positive for those firms that face financial problems than for those that do not.

The announcement effects of the whole sample indicate negative information about the firm, perhaps by indicating that it has got less potential for future cash flows, e.g. (Elayan *et al.*, 1998). Results are more negative when downsizings are permanent, with high magnitude and with a reactive character. When there are repeated announcements, they have a less negative impact (Lee, 1997).

Also the effect of union status on the market reaction to layoff announcements is assessed and influences the market reaction (Abraham, S., 2006). The market reaction is more negative when non-union employees were downsized than when the announcement concerned unionised employees. Unionised status of these laid off employees guide the market to view the downsizing as good news and associates them with many inefficiencies that are costly to firms. Investors view layoffs of unionised workers as a signal that the inefficiencies associated with unions are being diminished.

Positive effects

Conversely, in the studies of Davidson *et al.*, (1996), Ballester *et al.* (1999) or Chalos and Chen (2002) the reactions of the market have showed to be positive, for they were interpreted as an action with strategic character.

Early retirement programs announced also affect the firm performance (Davidson *et al.*, 1996). Investors tended to view these programs favourably. Ballester *et al.* (1999) used an international sample of 4695 cases from several countries and activity sectors. Results showed that firms that reduce their expense intensity, regardless of the accompanying changes in capital expenditure intensity or sales were well-rewarded by the capital market, despite having lower profitability. Different types of downsizing: revenue refocusing, cost cut and plant closure have distinct effects on the market reaction (Chalos and Chen, 2002). Those announcements of revenue refocusing had had significantly positive market returns, despite of being relatively small and this strategy is more successful than the cost cut strategy (ROA is significantly superior). On the contrary, market reaction to plant closures is negative.

It is important to mention that in several studies, distinct control variables were adopted and important differences existed. The expected duration, or the permanent / temporary character, has been a very used control variable (Worrell *et al.*, 1991; Lee, 1997; Elayan *et al.*, 1998). The permanent reduction of the employees size has a more negative result than the temporary ones. When the layoff was temporary, it was interpreted as a sign that the company was expecting a change soon; others consider the permanent layoffs as a sign of seriousness of the company's financial problems, and the solution demands long term changes (Worrell *et al.*, 1991; Lee, 1997).

Other important questions that we may refer are related to the events methodology used in this kind of studies. The effect measured on the stock price is a short term one. The problem is that the real effect can be prolonged for several years, a reason why the expectations at the beginning could not be verified after, due to the lack of information. Another issue is related to the exact identification of the date of the event, précising the date of the downsizing announcement. Generally speaking, they are involved in a group of actions that are developed over a large period of time. To be able to separate it from other events is not easy. That is why these conclusions about downsizing, based on the events studies, should be faced with due attention and care (McWilliams and Siegel, 1997).

Table 1.2: Downsizing impacts over stock market value results

<i>Author(s)</i>	<i>Sample</i>	<i>Period / Country</i>	<i>Sign</i>
Hillier <i>et al.</i> , (2007)	322 announcements	1990-2000/UK	-
Worrell <i>et al.</i> , (1991)	194 announcements	1979-1987/ USA	-
Iqbal and Shekhar (1995)	187 announcements	1986-1989/ USA	-
Davidson <i>et al.</i> , 1996	51 announcements	1982-1992/ USA	+
Chalos and Chen (2002)	656 announcements	1993-1995/ USA	+
Abraham, S. (2006)	135 announcements	1993-1994/ USA	-
Lee (1997)	300 announcements in USA and 73 in Japan	1990-1994/ USA and Japan	-
Ballester <i>et al.</i> (1999)	4.695 cases / companies and 41 countries and 6 activity sectors	1989-1997/ International sample	+
Elayan <i>et al.</i> (1998)	646 announcements	1979-1991/ USA	-
Wertheim and Robinson (2000)	604 announcements	1987-1994/ USA	-
Chen <i>et al.</i> (2001)	290 companies that had announced	1990-1995/ USA	+
Nixon <i>et al.</i> , (2004)	346 announcements	1990-1998/ USA	-

1.3.1.1.3 Other effects

Research on downsizing strategies has also highlighted that large firms often do not take into account the hidden (Fisher and White, 2000), or unanticipated (McKinley and Sherer, 2000) large term costs of downsizing derived from its negative effects on human and social capital. Thus, remarkable effort has also been made to analyse the impact of downsizing strategies on non-financial aspects of the firm, such as: organizational structures (e.g. Sutton and D'Aunno, 1989; DeWitt, 1993; McKinley, 1992), innovation and creativity capabilities (Dougherty and Bowman, 1995; Amabile and Conti, 1999), social networks that support organizational learning (Fisher and White, 2000; Shah, 2000) and even on employees' health (Vahtera *et al.*, 2004). Concerning the employees' health, a dramatic effect field, the mortality rate due to cardiovascular diseases is two times higher after major downsizing than after no downsizing. This mortality rate increased up to more than five times during the first four years after downsizing (Vahtera *et al.*, 2004).

Other non-financial issue, like the reputation for corporate social performance (RCSP), has been highlighted by research as another negative consequence of downsizing. (Zyglidopoulos, 2003). RCSP, in short, is the “firm’s reputation for principles, processes and outcomes related to the social impact of the firm’s operations” (Zyglidopoulos, 2003, pp. 12-13). There are social/psychological implicit contracts that relate to the ethical obligations of managers before their employees. With downsizing managerial decisions, the firm’s RCSP will be negatively affected. A greater negative impact on firms’ RCSP is achieved when companies revealed a high financial performance before downsizing. The impact of downsizing and organizational

discriminatory practices on social responsibility performance can be measured by the company's reputation index (Karake, 1998). Literature evidences that there is partial support for the belief that socially responsible corporations are achieving a better return on equity over those companies which are less socially responsible.

Contrarily to the other two groups of organizational effects, evidence is more clear respect to the general conclusions obtained in this non-financial groups of studies. A consensual negative effect is reached with downsizing.

1.3.1.2 Individual effects

Other types of downsizing effects are those concerning the survivors. Brockner *et al.* (2004, pp. 76) defined survivors as “the employees who are not laid off”. There are different effects, as we can see in Table 1.3. Researchers have paid increasing attention to the socio-psychological effects on workers who were not laid off after downsizing decisions, through several studies, empirical analysis and surveys. Research on downsizing effects on individuals has focused to the so called “survivors syndrome” (Brockner, 1988) that reflects several symptoms like anger, depression, fear, distrust and guilt, with consequences on the decrease of organizational commitment and on motivation.

A vast amount of research has been produced to explain the effects downsizing generates on survivors. This literature has centred on survivors' psychological states (job insecurity, anger, relief, moral, stress) and the attitudinal (satisfaction, commitment) and behavioural consequences (level of performance, motivation) of

downsizing. It has approached these problems from the perspective of individuals. Psychological states would appear to affect attitudinal and behavioural outcomes.

Downsizing is reflected in the loss of firm's capabilities, learning and innovation. Job insecurity and lack of commitment are further downsizing results and there are certain factors that could probably be related to the level of impact of downsizing on survival: the frequency (low or high frequency) and the level of control that the organization imposes on the decision to downsize or not (reactive reasons or proactive reasons in the decision). For example, when there are reactive reasons and a low downsizing frequency, this probably results in a larger amount of work to do, low confidence levels, low commitment levels and job insecurity. When there are reactive reasons and high downsizing frequency, one can expect fatigue, cynicism, low confidence levels and job insecurity. When the reason is proactive combined with high frequency, this probably results in more self-sufficient workers, with high confidence and commitment levels. Finally, when there are proactive reasons with low frequency, two possible situations arise: one that negatively affects the worker's psychological situation and another that positively affects the work quality owing to self-development (Sahdev, 2003).

If we consider organizational learning as an aggregating process of individual information, the past memory of human resources gains high importance. When, by downsizing, we lose that memory, innovation and learning are affected, through the end of informal networks that had been built over the years (Fisher and White, 2000).

Furthermore, the workers' creative behaviour is affected and, as a result, so is their innovative behaviour (Pech, 2001). Downsizing also produces less satisfaction in the

worker, because of the lower levels of morale, commitment, satisfaction and quality of life, and that employee-management relations are negatively affected (Wagar, 1998). Other negative effect of downsizing concerns the workers' morale (Makawatsakul and Kleiner, 2003; Mishra, 1996).

The stress produced as a consequence of downsizing has been also studied, showing that downsizing produces several perceived stress levels owing to the insecurity (Gregory, 1999; Devine *et al.*, 2003). Also the less confidence and additional responsibility (Devine *et al.*, 2003) or the reduction in professional opportunities and less loyalty (Gregory, 1999) are factors that imply more stress on workers. Other effects of downsizing include lower job control (confidence in one's influence on one's job), a psychological reaction (concerning satisfaction, anxiety, and depression), physical results and professional behaviour (leaving the company, being late for work...) (Devine *et al.*, 2003).

The job insecurity and the organizational commitment were two others used variables by the authors in previous literature. The impact of downsizing on job insecurity and on organizational commitment depends on the source of the job insecurity and organizational commitment. Therefore, downsizing reduces the affective commitment, increases the continuance commitment and increases job insecurity (Ugboro, 2003).

Whether the job insecurity were associated with the reduction in job satisfaction (De Witte and Naswall, 2003), confidence (Reisel and Banai, 2002) or organizational commitment (Reisel and Banai, 2002; Hartley, 1998; De Witte and Naswall, 2003).

Evidence points out that job insecurity was more closely associated with lower levels of satisfaction at work, lower organizational commitment and confidence levels.

Table 1.3 presents a synopsis of these studies, as well as the sign of the effect encountered. The literature review underlines that downsizing has several negative effects on survivors, showing that survivors' reactions to downsizing environments are negative, leading to job insecurity, lower organizational commitment, stress, lower satisfaction and efficiency in general (Byrne, 1994; Wagar, 1998; Armstrong-Stassen, 1998; Brockner *et al.*, 1992).

Table 1.3: Downsizing effects on survivors and other related studies

<i>Author(s)</i>	<i>Effects / Contributions</i>	<i>Sign / Effect</i>
Sahdev (2003)	Capabilities	-
	Learning	-
	Innovation	-
	Job insecurity	+
	Lack of commitment	+
Mishra (1996)	Motivation	-
	Employee morale	-
Fisher and White (2000)	Innovation	-
	Learning	-
Gregory (1999)	Stress	+
	Professional career opportunities	-
	Loyalty	-
Pech (2001)	Creative/innovative behaviour	-
Wagar (1998) ¹	Employee satisfaction	-
	Relation between employee-manager	-
Makawatsakul and Kleiner (2003)	Morale ²	-
Devine <i>et al.</i> (2003)	Stress	+
	Job control	-
	Psychological reactions	-
	Physical results	-
	Professional behaviours	-
Ugboro (2003)	Job insecurity	-
	Organizational commitment	-
	Confidence in managers	-
Hartley (1998)	Association between job insecurity and lower organizational commitment	N/A
De Witte and Naswall (2003)	Association between job insecurity and lower levels of commitment and job satisfaction	N/A
Reisel and Banai (2002)	Association between job insecurity and lower levels of commitment and lack of confidence	N/A

Notes:

¹ Wagar (1998) analyses another dependent variable: the efficacy of the manager in recruiting the worker, but we did not include this variable in our study because our aim was to study the effects of downsizing on workers and not on the managers.

² “Survivor’s sickness” is the term used to identify problems concerning the morale of workers who remain in the company after downsizing occurs (Cappelli *et al.*, 1997 in Makawatsakul and Kleiner, 2003).

N/A (not applicable): these are studies that have not analysed specific effects of downsizing on human resources.

What we may conclude from the literature review on innovative behaviour is that it is a fairly undeveloped theme owing to the complexity of the task (Scott and Bruce, 1994), and that studies concerning the effects of downsizing on innovative behaviour are almost non-existent. Some of them are shown in table 1.4. The actual situation is that

the downsizing survivors remain in the company only with a group of persons with whom they were used to work with, a new and different situation with understandable consequences.

In the last years, technology and its new tendencies and upgrades has been a very important issue throughout the companies worldwide. Companies must be competitive and it is imperative that they are always alert and innovative. In fact, workers play a delicate role in here. They must be able and have all the organizational conditions to develop innovative behaviours to be involved in the innovation process of their companies. The aim of become competitive trough the downsizing has also the reverse side: some negative effects on innovation/innovative behaviour, after downsizing strategies, are identified by several researchers.

Personal networks are the way how human resources acquire much of the information needed for the organisations innovation (Macdonald and Piekkari, 2005) and innovators create different networks to reach particular goals, specifically, networks around ideas, information and solution gathering or just about what is happening in a specific area (Cooper, 2005). When with downsizing several informal networks disappear, it damages the innovative capacity (Dougherty and Bowman, 1995). If those networks are necessary for innovation, the reduction of the workforce size of a firm will negatively affect the innovation process.

A related subject to the innovation, the learning capability - individual processes aggregation - was studied by Fisher and White (2000). Individual memories are the essential pieces of the organizational memory, and when a firm loses a significant

individual memory that was part of a collective one, it creates a fracture in the organizational and collective memory, with negative consequences. This can be applied to the innovation process. In short, downsizing can seriously damage the learning capability of organizations (Fisher and White, 2000).

With respect to organizational memory, it can be defined as the information stored throughout the organization’s history and which can be used to make decisions (Walsh and Ungson, 1991). One of the places where this memory can be stored is in the individual. When downsizing forces people to leave, they take that organizational memory, or at least a part of it (Gregory, 1999) with them. Since innovation is a process that involves the generation and implementation of ideas over time, it is logical that the innovation process would become penalized through the loss of organizational memory disappearing with the individuals who left.

Table 1.4: Downsizing effects on innovation and innovative behaviours

<i>Author(s)</i>	<i>Downsizing effects</i>
Dougherty and Bowman (1995)	Damages organizational innovative capability, by ending the informal network relations used to innovate
Fisher and White (2000)	Seriously damages organizational learning capability.
Gregory (1999)	Organizational memory, or a part of it, vanishes with the leaving workers.

A few studies concluded distinct negative effects on innovation/innovative behaviour, after downsizing strategies.

In short, the cut of the informal network of relations, a network that is necessary for innovation is a consequence of downsizing (Dougherty and Bowman, 1995). Moreover, downsizing can seriously damage the learning capability of organizations (Fisher and White, 2000). When downsizing forces people to leave, they take that organizational

memory, or at least a part of it (Gregory, 1999) with them. Consequently, reducing the workforce size prejudices the complex process that conduces workers to their innovative behaviour, by destroying the network of relations between workers and by loosing part of the organizational memory that each laid-off employee takes with him when he is leaving the firm. Thus, the laid-off human resources will take with them much of the information needed for the organisations innovation and will not sustain the needed informal networks. Moreover, layoffs may be perceived by workers as a violation of the psychological contract between them and their organization, resulting in decreased trust and greater stress in the workplace (De Meuse *et al.*, 2004). Consequently and accordingly to the literature review done, layoffs are associated with increased job insecurity, decreased commitment and productivity from survivors (Sahdev, 2003; Brockner 1992). Innovative workplaces may be negatively affected by layoffs once that they need a strong involvement of workers to play efficiently the ideas role in the productivity scene to achieve the innovative behaviour demanded to innovation (Zatzick and Iverson, 2006).

1.4 A META-ANALYSIS METHODOLOGY – EFFECTS ON PROFITABILITY

While observing the inconclusive state of art, concerning the specific case of the downsizing effects on profitability, we decided to develop a systematic review of the empirical studies on this topic, through a meta-analysis methodology. The meta-analysis has the special feature to be a complement to the narrative revision of literature and offers a more objective and formal process of reviewing the empirical literature.

1.4.1 Methodology

Since meta-analysis appeared, this methodology has been converted in a fundamental tool for literature review in several fields, like psychology, education and medicine. It also, recently, has been used in economics sciences (Stanley, 2001). According to Hunter *et al.* (1982), it supposes the possibility of combining quantitatively a group of original and empirical studies with the same goal. It analyses the descriptive statistics extracted from those studies but there is no need to access the original data from each study. It consists of several quantitative methods that combine and integrate different results from distinct studies made by several authors.

Meta-analysis techniques allow us to estimate a measure of the effect (in our case, the effect of the downsizing practices on profitability), the statistics signification of the effect and the analysis of possible relations or deviations due to the methodological characteristics of studies.

When compared to the traditional qualitative and narrative revision, the meta-analysis methodology shows several advantages, given that it is quantifiable and reproducible. But, despite combining and comparing different empirical studies, aspects like inadequate sample size or problems related to statistics signification may occur. When, in different studies, the same issue is analysed, we can find differences in their results, especially when those studies contain a small sample. The argument used by meta-analysis to combine studies is that by increasing the sample, also the statistic power will

increase. Furthermore, in the cases where studies have different origins (companies from distinct countries, for example) the results are more generalized.

The aforementioned does not release this methodology from some criticisms. The first one is related to mixing “oranges and apples” (Hunter and Schmidt, 1990). It is difficult to obtain logical conclusions by comparing and aggregating studies that include different measures, variables and concepts. Because of this, some meta-analysis researchers/authors dedicated their efforts to relate the studies’ characteristics with the obtained results so as to find the influence of the methodological factors on the effect size and also to identify those variables that can be moderating the causal relation. It requires the codification of the study characteristics that can be (*a priori*) related to the meta-analysis results and which the researcher considers as. With this procedure the researcher could explain the heterogeneity of the results. In spite of integrating the statistical of all studies, it is preferred to recognize the existence of sub-groups of data, which can lead to different size effects. Another solution to study the heterogeneity is by choosing a random effect model (Petitti, 1994), where we consider that an intrinsic heterogeneity always exists by combining results from different studies and estimating a new variability that includes differences between studies. This approach allows a great generalization of the meta-analysis results to future studies (Peto, 1987).

Other important limitation has to do with the publication bias, meaning that some studies with more significant results have more probability for being published than those that are not significant. To avoid this situation, the meta-analysis research must include PhD dissertations, books or non-published articles. Our study follows all these procedures in order to eliminate potential limitations.

1.4.2 Research Design

The first step in the meta-analysis procedures is always to identify and collect all the empirical studies that are relevant concerning the subject studied. We searched the studies that were related to the downsizing effects in an exhaustive way. First of all, we collected all those studies related to the downsizing consequences and that were the base for the literature revision done in the first part of this study. Within the two sub-groups of studies (stock market value and profitability) we decided to focus only on one, trying not to introduce too much heterogeneity. We decided to build a meta-analysis relating to the downsizing effects on the profitability measures, basically because of two reasons: firstly, this was the group with the higher number of studies; secondly, the methodology of these studies is based on mean differences analysis, and that is the most basic and standardized case used in the meta-analysis techniques.

We used ABI/INFORM and EBSCO databases with the same key words: downsizing, layoffs, effects and performance. The search included several sources, like academia articles, books, dissertations and documents of conferences. Despite this, we could not find any books or dissertations and we did not ask any author his/her studies.

The next step was the systematic analysis of the information contained in the studies, a stage in which we tried to identify the studies elected ultimately (or ready to make part of the meta-analysis). We coded some studies in order to avoid mixing “apples with oranges”. Then, we analysed their methodology, the available statistics and the ways of measuring the phenomena. After this, some studies could not remain in the analysis due to several reasons, being the distinct downsizing definitions the first of them. We

considered those studies that only analysed the impact of “doing” or “not doing” downsizing (and not those of the magnitude, like that of Krishnan and Park (1998); Wayhan and Werner (2000) or Mentzer (1996)). We only included those studies which referred to the effect of the employment reduction. We also included those studies that analysed the differences between two groups that compared the results from the companies which implemented downsizing with the results from those which did not implement it, or that compared the “before/after” results from the same companies that had implemented downsizing. We excluded the studies where other methodologies than those of mean differences, like multiple regressions (Krishnan and Park, 1998; Chalos and Chen, 2002), were used. Also due to the lack of statistical information (Bruton *et al.*, 1996; Elayan *et al.* 1998) or atypical values (Espahbodi *et al.*, 2000) we excluded some other studies.

Notwithstanding the use of several ratios in the same study to measure the downsizing effect, most of the studies used ROA. Because of this, we elected this ratio as the dependent variable. We included other studies that used ROS, for we considered that the information revealed was similar to the purpose of our analysis.

The eight remaining articles are similar in the following items:

- adopted the mean difference methodology
- offered data about:
 - sample size (for companies where downsizing was implemented and those where it was not);
 - mean results (for companies where downsizing was implemented and those where it was not);

- exact p-value or a conservative approach of this value when it was not revealed and adjusted from the p-value to the signification level elected by the authors.

Based on the p-value we calculate the used effect size.

Finally, we applied the meta-analysis techniques to eight studies.

1.4.3 Analysis

The meta-analysis techniques give us information about two situations: the global effect estimation (with the integration of the empirical studies) and the valorisation of the heterogeneity of those studies. These are the two main steps of this part. The first goal is to integrate the results of several empirical studies, electing a parameter that quantifies the measure of the effect. In our case, we measure the effect by the mean difference between groups. This effect measures the distance between the null hypothesis and the alternative hypothesis (Wolf, 1986).

$$\frac{\mu_{ND} - \mu_D}{\sigma}$$

Where μ_{ND} is the mean of the companies that did not downsize and μ_D is the mean of the variable of companies that did, σ is the conjoined variability.

The value of the effect is calculated by standardizing the studies means through the standard deviations, for each of the elected study. This measure is dimensional, allowing us to integrate variables measured in different scales. The logical estimator for this measure is the one purposed by Hedges (1982):

$$d = \frac{\bar{x}_{ND} - \bar{x}_N}{s^*}$$

Where:

$$s^* = \frac{(n_{ND} - 1)s_{ND}^* + (n_D - 1)s_D^*}{n_{ND} + n_D - 2}$$

We used the estimators corresponding to the parameters that were used in the calculus of the effect size. The inconvenience of this estimator is that it presents bias. Though,, when the sample sizes of each study are big, a situation that occurs in our case, this estimator is unbiased (Hedges and Olkin, 1985).

The measures of the effect for each of the eight studies concerning the effects of downsizing on profitability are presented in table 1.5.

Table 1.5: Effect size of each study

<i>Study</i>	<i>Effect size (d)</i>
De Meuse <i>et al.</i> , (2004)	0.25
Yu and Park (2004)	0.40
De Meuse <i>et al.</i> (1994)	0.79
Suárez-González, (1999)	0.34
Chen <i>et al.</i> (2001)	0.21
Cascio <i>et al.</i> , (1997)	0
Kang and Shivdasani, (1997)*	0.07
Cascio <i>et al.</i> , (1997)	0.03

* Dependent data/samples. All the rest are independent data/samples.

Once that we already have all the studies in the same scale, we can now integrate them with a weight measure (where the importance of each study is proportional to its precision measured with the inverse of variance) through a fixed effect model. We also used two types of analysis to verify the differences between the biased estimator and the unbiased. Finally, we used the unbiased estimator from Hedges, due to the large sample size. The integration of the different studies to calculate the effect size of the global effect is done trough:

$$\bar{d} = \sum_{i=1}^n d_i * w_i / \sum_{i=1}^n w_i$$

$$w_i = 1 / Var_{w_i}$$

$$Var_{w_i} = (n_1 + n_2) / (n_1 * n_2)$$

Where:

\bar{d} is the effect size integrated;

d_i is the effect size of study i;

w_i is the inverse of variance of study i;

i is study i;

n_i is the simple size of study i;

Table 1.6 presents the financial results of the global effect estimated and its variance for a signification level of 0.05.

Table 1.6: Global integration results

<i>Unbiased \bar{d} :</i>	<i>Global analysis (8 studies)</i>
Size	0,062
Variance	0,001
Homogeneity Test (Q _H)	21,79
Q _H p-value	0,002756

According to Cohen (1977), to the interpretation of the effect size result from the integration, when d is lower or equal to 0.2 the size effect is considered as short. When the obtained value is between 0.2 and 0.8, the effect is moderated and when it is bigger than 0.8 we consider that the effect is considerable. In our case, the estimated global

effect is very small (0.062, lower than 0.2) and we should interpret it as an inappreciable effect (Cohen, 1977).

While analysing the heterogeneity in the studies (in meta-analysis), we assume that each study gives an estimator of the size effect that is representative of the whole population. If a group of independent studies gives us an estimator of the global size effect that is homogeneous, it is more probable that all the studies are testing the same hypotheses. The heterogeneity can be seen as a warning of the inadequate combination and synthesis of the results from different studies in a same meta-analysis (Wolf, 1986). The effect homogeneity Q-Test constitutes a weight sum of the effect deviation calculated in each study related to the global mean and is represented as follows:

$$Q_H = \sum_{i=1}^n w_i (d_i - \bar{d})^2 = \chi^2$$

This Q hypothesis of homogeneity follows a χ^2 distribution with k-1 degrees of freedom, where k symbolizes the number of studies. In the global analysis the p-value is 0,002, rejecting the null hypothesis of homogeneity between the obtained effects and each of the eight elected studies, In this particular case, it is close to 0.001 (0,002). The homogeneity is therefore accepted, but the signification level is too small, so we decided to proceed with a sub-group analysis.

Thus, we adopted a sub-group analysis by applying the meta-analysis techniques to different groups of studies. These different groups of studies are grouped according to their studies' characteristics or sample's characteristics. More specifically, our aim was to create four sub-groups (see Table 1.7):

- Analysis 1 (A1): studies that give us the exact p-value and with ROA as the dependent variable.
- Analysis 2 (A2): studies that give us the approximate p-value (we have approximated the non-exact p-values. They assumed 0.05 when they were significant and 0.5 in the cases where they were not).
- Analysis 3 (A3): studies in which ROA is the dependent variable.
- Analysis 4 (A4): studies that give us the exact p-value.

Table 1.7: Different sub-groups analysis and integrated studies

<i>A1 (3 studies)</i>	<i>A2 (4 studies)</i>	<i>A3 (7 studies)</i>	<i>A4 (4 studies)</i>
Yu and Park (2004) Chen <i>et al.</i> (2001)	De Meuse <i>et al.</i> , (2004) De Meuse <i>et al.</i> (1994)	De Meuse <i>et al.</i> (1994) Chen <i>et al.</i> (2001)	Yu and Park (2004) Suárez-González, (1999)
Kang and Shivdasani, (1997)	Cascio <i>et al.</i> , (1997) Cascio <i>et al.</i> , (1997)	Morrow Jr., Jonson and Busenitz (2004) De Meuse <i>et al.</i> , (2004) Yu and Park (2004) Cascio <i>et al.</i> , (1997) Kang and Shivdasani, (1997)	Chen <i>et al.</i> (2001) Kang and Shivdasani, (1997)

The global effects estimations to the different subgroup analysis are presented in table 1.8, to a signification level of 0.05.

Table 1.8: Sub-groups' integration results

<i>Unbiased \bar{d} :</i>	<i>A1 (3 studies)</i>	<i>A2 (4 studies)</i>	<i>A3 (7 studies)</i>	<i>A4 (4 studies)</i>
Size	0.201	0.022	0.055	0.217
Variance	0.003	0.001	0.001	0.003
Homogeneity test (Q_H)	3.95	6.80	18.59	4.63
Q_H P-value	0.13894	0.078547	0.004924	0.200819
R^2	0.759	0.882	0.950	0.703

The main conclusion is that, despite the sub-groups' analysis, the global effect of the downsizing practices in the companies' profitability still remains positive, but very

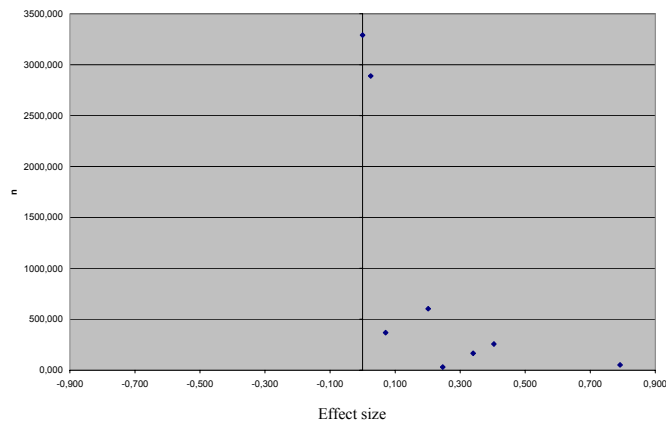
small. Only in the A1 and A4 sub-groups the estimated effect can be classified as a small one (0.201; 0.217), according to Cohen (1977). In all the other analyses, the global effect is inappreciable. Accordingly, the available empirical evidence does not support the common idea that downsizing contributes to the increasing of the companies' results.

In all the analyses, A1, A2, A3 and A4, the p-value of the Q test of homogeneity is higher than 0.001, accepting the homogeneity of the obtained effects from the integrations done, although the signification level is too small.

Due to the low potency of the homogeneity test (Pettiti, 1994), another measure can be used to solve this question - the R^2 , due to its good interpretation. The R^2 has no superior boundary, although the inferior one is zero and tells us that part of the total variability of the estimator is due to the variability among studies. The more distant it is from zero, the more important the variability among studies will be. In all the analyses, the R^2 is higher than 0.703, indicating that there is variability between studies.

Additionally, we can explore other possible problems of meta-analysis techniques. The publication biases can be one of the problems. The funnel display (Light and Pilemer, 1984) is one possibility to verify the existence of this problem.

Figure 1.2: Funnel display of the global analysis



According to the funnel display, a result from our study to a signification level of 0.05, we can verify that it has the shape of a funnel, with the eight points spread through the diagram. There seems to be consistency in the estimators and, apparently, there is not a bias publication problem.

1.5 CONCLUSIONS

Downsizing has been a major organizational trend since the early 80's. From that decade on the firms' decision of reducing the number of employees or downsizing began to assume a very important part of their history on developed countries.

The downsizing definition is not unique or consensual in the literature. The one that belongs to Cameron (1994, pp. 192) appears to be very comprehensive: "set of activities, undertaken on the part of the management of an organization and designed to improve organizational efficiency, productivity and/or competitiveness.(...) It represents a strategy implemented by managers that affects the size of the firm's workforce, the costs, and the work". Despite the several definitions, there is a consensus

about the characteristics of the phenomena. Firstly, downsizing is something intentional; secondly, it often results in a net decrease of the number of employees and thirdly, the increase in profitability, as a downsizing result, is implied or explicit in several definitions.

Even though it is a generalized phenomenon in developed countries (USA, Australia, Spain, Portugal, e.g.), downsizing also occurs in several activity sectors. Not only did it affect industrial or manufacturing companies, but also hospitals and health services or armed forces.

We should keep in mind that these downsizing practices have been implemented by companies with financial problems. Today, it is frequent that healthy financial companies approve restructuring plans.

The main goal of these practices is to reach better corporate financial results. However, if downsizing actually improves the firm's performance or not has been a vital issue that can be read in the downsizing literature. The reality is that profitability does not necessarily follow the downsizing practices. Nor even the stock market reaction is always and generally positive for downsizing announcements.

Regardless of the organizational effects, the other group of effects (the individual ones) cannot be ignored. Survival human resources are affected in several items by downsizing. Increased job insecurity, lower commitment, motivation, morale or innovation levels are some of the multiple effects of these practices on the survival human resources that remain in the company: the so called survivors.

Moreover, in our study, we made a revision of the state of art including a meta-analysis with the purpose of synthesizing the previous organizational effects of downsizing on profitability. The meta-analysis acts, in this study, as a complement to the narrative revision of literature. By integrating eight studies, we estimated a global effect, which, despite the positive effect, is very small. Also the sub-group analysis reaches the higher effect size in the group of studies that give us the exact p-value, although it is still inappreciable. From the empirical evidence we cannot definitely conclude that the plant reductions increase the company's profitability. Our results question the downsizing practices.

1.6 FUTURE RESEARCH AND LIMITATIONS

The main limitation of our study is related to the number of final studies, essentially due to the lack of data contained in the publications. This factor is determinant to demand a more complete exploration of the meta-analysis potential, a reason why we suggest the need for new publication rules. The lack of quantitative information in the previous studies, inhibit us to contrast the particular information of each study with the quantitative integration of the meta-analysis.

Two lines of future research can be opened from now on. On the one side, the need for the meta-analysis integration of those studies that analyse the impact of downsizing announcement in the stock market value. On the other side, we should explore the heterogeneity sources amongst the empirical studies. Even though the meta-analysis techniques, as well as other econometric techniques, suffer from some limitations, it is

generalized that meta-analysis can be a useful tool so as to complement the state of art in a quantifiable form.

1.7 MANAGEMENT IMPLICATIONS

Several companies, from distinct countries and different activity sectors, are adopting restructuring downsizing practices, with the aim of reaching a better financial performance. Despite this, the revision of several empirical studies does not allow us to conclude that those restructurings have a positive effect in the company's performance. Prior empirical results are inconclusive and do not present a coherent conclusion.

Our study shows, from the empirical evidence and with the meta-analysis methodology, that we cannot conclude that the plant reductions increase the company's profitability. Our results question the downsizing practices and managers should take them into account and carefully decide on whether to implement downsizing strategies in their companies or not.

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CHAPTER II

DOWNSIZING EFFECTS ON THE PROFITABILITY OF PORTUGUESE COMPANIES

2.1 INTRODUCTION

Trying to survive in a turbulent, dynamic and competitive global market, companies are adopting several and distinct restructuring strategies. One of them is the organizational downsizing. In our first chapter, we may observe that several countries and industries are being affected by this new tendency, having an effect on millions of employees all over the world. Portugal is a European country that did not escape from this management tendency. International companies located in Portugal, like IBM, General Electric or more recently like Delphi, Alcoa Fujikura or Yazaki Saltano announced and implemented such strategy in order to become more competitive. Despite the fact that everyone refers to downsizing as a common practice, there are no managers or media, employees or others who studied its impact or, at least, some source of change, in the performance of companies.

According to Carswell (2005) the increase in profitability, as a downsizing result, is implicit or explicit in several definitions. Also Cameron (1994) assumes that the definition of downsizing means a strategy to improve organizational efficiency, productivity and/or competitiveness. Although there are already several countries, which were empirically studied, being the US context on the top of them all, there is not a single scientific study about the Portuguese reality on this issue. Besides, there is a need to go over the dynamics of the downsizing in relation to other economies, apart from the US context (Littler and Innes, 2004). Consequently, we intend to verify the Portuguese downsizing reality. One of the theoretical approaches evidences that the rational approach is based on the assumption that downsizing is a managerial response

to decreased profitability of the company. Due to this, we should expect that there is a positive relationship between downsizing and profitability. We will only focus on the profitability consequences, due to:

- 1 - There is not a single scientific study on this type of effect in Portugal;
- 2 - Portuguese reality is mainly composed by small sized companies which are not on stock market.

Consequently, many questions remain concerning the financial effectiveness and the success of organizational downsizing strategies. Questions like these will be analysed in this study:

- 1 - What about the official Portuguese situation concerning downsizing?
- 2 - And what about the DOWNSIZERS' firms with respect to NO DOWNSIZERS? Are they different in their financial behaviour?
- 3 - Did the Portuguese companies adopt downsizing when they had negative financial ratios in the prior year?
- 4 - Did the Portuguese companies, that implemented downsizing, really improve their profitability in the following years as a result of this practice?

The purpose of this section is to answer these questions making an empirical analysis on the issue of the consequences of downsizing on the profitability of Portuguese firms, giving a statistical and sustained opinion to managers, trying to prove whether downsizing is indeed a successful strategy for companies to achieve future profitability growth. We intend to systematically verify the relationship between downsizing and financial performance over an extended period of time proposing a study drawing from a very large sample.

This section is divided into several subsections: we begin with the Portuguese official reality on the issue. Then, we present the theoretical background and our hypotheses supported by theory. Afterwards, we present the adopted methodology, in which the objective, some data, sample and variables are presented. Then we carry on with the analysis, followed by conclusions as well as future research lines and limitations. The chapter comes to an end with the management implications.

2.2 THE PORTUGUESE REALITY

The employment strategies are affected by institutional and contextual conditions, thus conditioning the importance and the nature of downsizing strategies (Gooderham *et al.*, 1999).

Evidence about the downsizing phenomena in the American context is strong (Elayan *et al.*, 1998; Cascio *et al.*, 1997; De Meuse *et al.*, 1994) and also some evidence exist concerning the Europe context (Suárez González, 1999; Hillier *et al.*, 2007) and also common among Asian firms (Ahmadjian and Robinson, 2001; Yu and Park, 2006). Different contexts assume distinct features and particularities, exploited in all these studies. Although, the Portuguese evidence is inexistent, its context should be reviewed for a better understanding of the downsizing strategy.

Diverse special features of the Portuguese labour market structure and industrial relations system are embracing this phenomena. The Portuguese labour market, as well as the most of the European countries, have regulatory policies and legal support which are very protective of workers and require more costs when a firm decides to dismiss

their employees, than the American one. Comparing it with the U.S. context, the Portuguese firms that decide to implement downsizing appear to have more difficulties and costs.

In the last decade, firms which were under state control suffered a privatisation plan, like the case of PORTUGAL TELECOM (phone services and telecommunications) or EDP (energy). The assumption that the privatisation would lead firms to a productivity increase and that firms would become more competitive, have conducted to a retrenchment and workforces reductions.

Also, several Portuguese firms were acquired by foreign multinationals which decided to exploit the small labour costs and the free access to European markets. This strategy implied the necessary adjustment of the workforces size in order to become competitive and profitable.

All these particularities have definitely influenced the spread of downsizing, as might be seen in the official data, among the Portuguese firms in the last years.

The *Direcção Geral do Emprego e das Relações de Trabalho* (DGERT) is the Portuguese service of the Social Solidarity and Work Ministry with the mission to support the conception of politics concerned with employment, training, professional certification and relations, including work conditions and security, wealth and well being at work².

² Legal support of *Decreto-Lei* n.º 266/2002, of 26th November, and article 13º of *Decreto-Lei* n.º 211/2006, of 27th October.

According to the DGERT's web site, data can be obtained for a better understanding of the Portuguese reality regarding collective lay-off.

Table 2.1: Collective lay-off concluded from 1995 to 2005, in Portugal

<i>Year</i>	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Companies	103	90	86	62	54	37	39	71	94	95	94
Workers	11.206	10.705	9.420	10.683	3.728	2.613	5.806	7.561	12.646	11.818	10.035

Source: Adapted from http://www.dgert.msst.gov.pt/Relacoes%20Profissionais/elementos_estatisticos/despeditos_1995.htm at

15th December 2007

In a period of ten years, from 1995 through 2005, about 96.200 workers have been laid-off from 941 companies. These numbers are the official ones from communicated cases. They represent a dramatic reality for Portuguese workers and companies. The year 2003 is the worst one concerning the affected employees. We must be conscious of the fact that the 2003 year was a crisis' year concerning the Portuguese economy. Portugal had in 2003 the worst GDP value (-1, 12%) of the last decade (OCDE, 2008).

Table 2.2: Collective lay-off concluded from 1995 to 2005, by Portuguese regions

<i>Year</i>	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
North and Centre	45	48	40	26	24	11	24	36	29	43	45
Lisbon and Tejo Valley, Alentejo and Algarve	58	42	46	36	30	26	15	35	65	52	49
Total	103	90	86	62	54	37	39	71	94	95	94

Source: http://www.dgert.msst.gov.pt/Relacoes%20Profissionais/elementos_estatisticos/despeditos_1995.htm at 15th December

2007

Concerning the regions where these processes occurred, we may verify that the South was the most affected through the analysed years by DGERT, except in the years 1996, 2001 and 2002.

During the last year (2007), just in the three first trimester, from January to September, data revealed a problematic situation of collective lay-off processes concluded, in comparison with 2006. Table 2.3 suggest that some attention should be gave to the Portuguese downsizing reality.

Table 2.3: Concluded lay-off processes in 2006 and 2007, in Portugal

Region	Firm size	TOTAL 2006						Total 2007 (January to September)					
		Firms	Total	To lay-off	Workers Already laid-off	Revoked	Other	Firms	Total	To lay-off	Workers Already laid-off	Revoked	Other
North	Micro	12	73	40	22	14	0	15	95	90	89	0	1
	Small	23	675	249	193	52	1	25	621	366	295	35	0
	Medium	6	630	114	103	11	0	12	1174	466	341	121	0
	Big	4	2506	777	704	73	0	5	3280	92	78	14	0
	Total	45	3884	1180	1022	150	1	57	5170	1014	803	170	1
Centre	Micro	1	10	5	5	0	0	8	40	29	24	5	0
	Small	8	442	222	144	0	11	8	232	149	135	0	8
	Medium	7	684	240	223	6	2	4	413	57	53	2	0
	Big	0	0	0	0	0	0	3	1692	570	470	10	90
	Total	16	1136	467	372	6	13	23	2377	805	682	17	98
Lisbon and Tejo Valley	Micro	7	40	29	22	3	2	6	41	21	14	7	0
	Small	26	630	206	116	26	40	18	325	142	140	0	0
	Medium	12	1425	365	323	39	13	7	903	151	124	17	5
	Big	8	3377	121	71	49	1	2	5884	15	9	6	0
	Total	53	5472	721	532	117	56	33	7153	329	287	30	12
Alentejo	Micro	0	0	0	0	0	0	2	13	6	6	0	0
	Small	0	0	0	0	0	0	2	65	27	24	3	0
	Medium	0	0	0	0	0	0	1	104	9	7	2	0
	Big	0	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	0	0	0	5	182	42	37	5	0
Algarve	Micro	1	4	4	0	0	0	0	0	0	0	0	0
	Small	0	0	0	0	0	0	1	29	8	8	0	0
	Medium	1	74	5	5	0	0	1	58	6	5	0	1
	Big	0	0	0	0	0	0	0	0	0	0	0	0
	Total	2	78	9	5	0	0	2	87	14	13	0	1
Total	Micro	21	127	78	49	17	2	31	189	146	133	12	1
	Small	57	1747	677	453	78	52	54	1272	692	602	38	8
	Medium	26	2813	724	654	56	15	25	2652	689	530	142	6
	Big	12	5883	898	775	122	1	10	10856	677	557	30	90
	Total	116	10570	2377	1931	273	70	120	14969	2204	1822	222	112

Source: DGERT

* According to the 91th article of the Portuguese Labour Code.

Just in the first nine months of 2007, data are higher than in the year 2006. The number of firms that implemented lay-offs is of 120, a higher number than that of firms which implemented it in 2006. As to the affected workers, the total number reached 14969, about 42% more than in 2006. The Portuguese media also reveals, frequently, cases of downsizing. During this year, we have a few examples of this dramatic reality. The closure of the *Alcoa Fujikura* - an American multinational company in Portugal, in the automotive cable industry that, in February 2007, laid-off about 480 employees - is the first example. Also *Delphi*, from the same industry that Alcoa Fujikura, announced in May 2007 the lay-off of 500 employees until the end of the year. The third case is that of *Yazaki Saltano*, also in the automotive cable industry, a company that during 2006 announced the lay-off of a total of 533 employees from the Portuguese unity. The Portuguese television channel *TVI – Televisão Independente*, presented on the 13th of November 2007, during the prime time news “*Jornal da Noite*” a piece of news with the title: downsizing in Portugal, in the first nine months of 2007, is already higher with respect to 2006. Also SIC Television communicated some similar news on the 20th of November, 2007.

Supra-cited data and examples are strong indicators that the Portuguese reality regarding the theme of downsizing is indeed contemporary and should be deeply analysed in terms of the financial effects on profitability.

2.3 THEORETICAL BACKGROUND AND HYPOTHESES

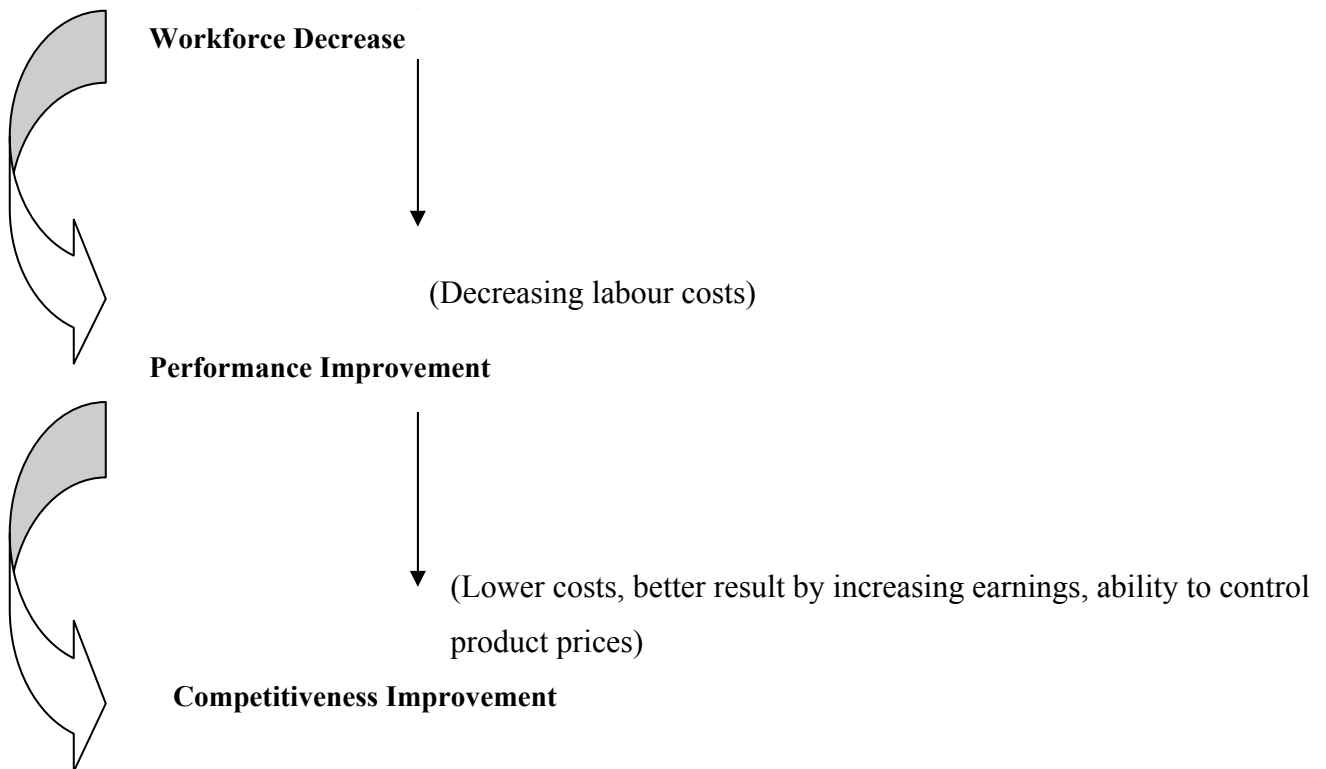
Since the rational approach is based on the assumption that downsizing is a managerial response to the decreased profitability of companies and that firms downsize in order to

improve efficiency and profitability (Mentzer, 1996; McKinley *et al.*, 2000), we intend to apply this to a sample of Portuguese firms that decided to reduce their workforce size in the last years and statistically verify the achieved results with this downsizing practice.

2.3.1 Downsizing effects on profitability

This chapter is based on a theory that considers the effect of organizational downsizing from an economic perspective, a rational paradigm, assuming that managers implement downsizing strategies to reduce their companies' organizational costs and, simultaneously, to enhance financial performance (McKinley *et al.*, 2000). Theoretical support proposes that downsizing has a positive impact on financial performance and, subsequently, this strategy eliminates redundancies, streamlines operations and reduces labour costs. Reducing the employee's number and diminishing the personal costs will have a positive impact on profitability, either by enhancing lower costs and increasing results or in what concerns the competitive capacity due to the consequent reduction of prices. (Cascio *et al.*, 1997).

Figure 2.1: Expected results of downsizing



Source: Adapted from Cascio *et al.*, 1997

Based on this economic theory, literature, so far, has been supported by this assumption of downsizing effectiveness through the improvement of financial indicators. In an explicit or implicit way, in much of the research, authors adopted an economic perspective to explain the occurrence of downsizing. They assumed that the decision makers understand the relationship between downsizing and future financial performance, so that downsizing can be used as a rational and predictable tool for manipulating that mentioned performance (McKinley *et al.*, 2000). However, not only academics assumed downsizing as a successful option to improve profitability, but also many managers consider employee layoffs as a strategy for reducing costs and improving financial performance (Shah, 2007).

Despite the researcher's focus on the relationship between downsizing and future performance, findings until now have been mixed and there is no supporting of the consistent existing of this positive relationship (Marques *et al.*, 2007; McKinley *et al.*, 2000). Notwithstanding the controversial results - some positive impacts, other negative or simply no significantly effects of downsizing on performance - researchers should step forward in this researching field. Some authors (De Meuse *et al.*, 2004) assign these inconclusive results to two probable reasons: relatively short period in which downsizing was investigated or due to the lack of objectives' indices that measure the financial effectiveness of an organization.

2.3.2 Hypotheses

Both in the market or in the profitability research field, theoretical support evidences that the downsizing is mainly a reactive action to some financial problems (Yu and Park, 2004; Hillier *et al.*, 2007; Worrell *et al.*, 1991). Even though there are several types of downsizing than the reactive one, like the proactive one to the consolidation or restructuring strategies, the financial distress of firms is assumed to be the essence of the downsizing future decision done by managers. The act of reduction the workforce size is often associated with a management reaction to the negative financial results that a firm has achieved. Thus, firms that engaged in downsizing for a year were motivated by a prior underperformance level when compared with the rest of those companies that did not engaged in workforce reductions. We summarize these arguments in the following hypotheses:

H1: ROA from DOWNSIZERS companies are significantly lower than ROA from NO DOWNSIZERS firms, in the previous year to downsizing.

H2: PM from DOWNSIZERS companies will be significantly lower than PM from NO DOWNSIZERS firms, in the previous year to downsizing.

Downsizing is often defined in the literature as an intentional effort to permanently reduce personnel in order to improve organizational efficiency and/or effectiveness (Cameron *et al.*, 1993; Freeman and Cameron, 1993). According to Cascio *et al.* (1997), reducing the employee number and diminishing the personal costs has a positive impact on the profitability (lower costs, increasing of results). Based on this, we would expect downsizing to improve the profitability measures of those companies that implement it, by reducing its labour costs and all the associated red type of having a large workforce size. In the years subsequent to that of the reduction of the workforce size, profitability measures would increase and lead firms that implemented these practices to a more attractive financial position. Based on this, we summarize our 3rd, 4th, 5th and 6th hypotheses:

H3: ROA from DOWNSIZERS companies will be significantly higher in the succeeding years to downsizing respect to NO DOWNSIZERS firms.

H4: PM from DOWNSIZERS companies will be significantly higher in the succeeding years to downsizing respect to NO DOWNSIZERS firms.

H5: *ROA from DOWNSIZERS companies will increase significantly in the succeeding years to downsizing, as a result of the downsizing practice.*

H6: *PM from DOWNSIZERS companies will increase significantly in the succeeding years to downsizing, as a result of the downsizing practice.*

2.4 METHODOLOGY

2.4.1 Objective

This study analyses the management decision's effects of downsizing on profitability from Portuguese companies along the period 1993 – 2005. Two main groups of Portuguese firms were studied, those that downsized their workforce at least once (DOWNSIZER) and those that did not (NO DOWNSIZER), along a thirteen-year period.

We should regard that this group of empirical studies is involved in heterogeneity, in the adopted methodology, increasing the difficulty in reaching a consensual conclusion from the empirical evidence. There are differences in the methodology research design to identify those companies that implemented layoff programs. Some studies define their sample from the announcements in press (De Meuse *et al.*, 1994; Kang and Shivdasani, 1997; Elayan *et al.*, 1998; Chalos and Chen, 2002), some others define the sample with a survey (Yu and Park, 2004) or by calculating the negative variations in the employment volume (Cascio *et al.*, 1997; Suárez-González, 1999). In this last situation, the downsizing is defined by the reductions in the employees, more than 3% (Cascio *et al.*, 1997) or 5% (Suárez-González, 1999). With respect to the dependent

variable, in all the studies the corporate results are measured with accounting information, but the accounting ratios used are different: return on assets (ROA), return on equity (ROE) or return on sales (ROS) in some studies, but also some measures of efficiency and productivity. At last, there are combined regression methodologies (where the downsizing is the repressor of the results, controlled by other variables) (Bruton *et al.*, 1996; Mentzer, 1996; Kang and Shivdasani, 1997; Krishnan and Park, 1998), with analysis of mean differences, comparing groups (profitability of the companies that implemented downsizing and those who did not) or in different moments of time (before and after the implementation of these actions) (De Meuse *et al.*, 1994; Suárez-González, 1999; Chen *et al.*, 2001).

Table 2.4: Methodological characteristics of profitability studies

<i>Author(s)</i>	<i>Sample</i>	<i>Data source</i>	<i>Downsizing measure</i>	<i>Accounting dependent variable(s)</i>
De Meuse <i>et al.</i> (1994)	1987-1991/ USA	Secondary	Announced layoffs as a percentage of total employees	Profit margin, ROA, ROE, Asset turnover
Mentzer (1996)	1986- 1994/Canadá	Secondary	Percentage change in the number of employees ³	Percentage change in net income, ROA, Percentage change in sales
Cascio <i>et al.</i> (1997)	1980-1994/ USA	Secondary	Percentage change in the number of employees (5%)	ROA
Kang and Shivdasani (1997)	1986- 1990/Japan and USA	Secondary	Layoff	ROA, Industry ROA, Total debt/assets, Bank debt/assets
Elayan <i>et al.</i> (1998)	1979-1991/ USA	Secondary	Announcements	ROE, Sales/Employee, Net income/Employee ⁴
Krishnan and Park (1998)	80's/ USA	Secondary	Percentage change in the number of employees in a period time	ROS
Suárez González (1999)	1989-1994 /Spain	Secondary	Percentage change in the number of employees (5%)	ROS, Labour productivity
Espahbodi <i>et al.</i> (2000)	1989-1993/ USA	Secondary	Percentage change in the number of employees (2%)	Pretax operating cash flows, Book value of lagged total assets
Chen <i>et al.</i> (2001)	1990-1995/ USA	Secondary	Announcements	ROA, Operating earnings/sales, Cost of goods sold/sales, Sales and administrative expenses/sales, Sales/employee, Capital expenditure/employee
Chalos and Chen (2002)	1993-1995/ USA	Secondary	Announcements in database	ROA, Sales, Cost of Goods
Morrow <i>et al.</i> (2004)	1980-1995/ USA	Secondary	Cost retrenchment and Asset retrenchment	ROI, Tobin's Q, Market-to-book ratio
De Meuse <i>et al.</i> (2004)	1987-1998/ USA	Secondary	Magnitude of the announced layoff divided by total number of employees in the company	Profit margin, ROA, ROE, Asset efficiency, Market-to-book ratio
Yu and Park (2004)	1997- 1999/Korea	Primary (survey) and Secondary	Survey (1 if downsizing or honourable retirement)	ROA, Asset turnover, Operating income per employee, Sales per employee, Value added per employee
Yu and Park (2006)	1997- 1999/Korea	Primary (survey) and Secondary	Survey (1 if downsizing or honourable retirement)	ROA, Asset turnover, Operating income per employee, Sales per employee, Value added per employee
Carswell (2005)	1997-1999/ New Zealand	Primary (survey)	Survey response	Profit margin, ROA, ROE, Sales per employee
Farrell and Mavondo (2005)	Australia	Primary (survey)	Survey: downsizing driving redesign items and redesign driving downsizing items	Customer retention, New product success, Sales growth, ROI, Overall performance

³ The extent of downsizing was a dependent variable in some hypotheses and an independent one in some others.

⁴ Event study methodology.

As one may see, several authors studied the downsizing effects on profitability all over the world. Also distinct ratios were used, according to the author's principles. There is not a common ratio or measure considered to be the best one; all the approaches denote some specificities and advantages, according to the authors' support. Table 2.4 presents a list of authors, sample, data source and indicators adopted in the last years.

We intend to determine whether a downsizing was related to some sort of positive change in the profitability of the Portuguese companies that implemented it and to compare the DOWNSIZERS companies with the NO DOWNSIZERS, trying to analyse if their performances differ significantly.

2.4.2 Data and sample

Data were obtained from the Amadeus database. It provides, electronically, data from 23416 Portuguese companies, making available a complete financial profile, the corresponding profit and loss accounts as well as the balance sheet. A precious variable available in AMADEUS is the employment level. In further studies, an European coherent comparison is allowed. Firms are ranked by operating revenue divided by turnover. Two main categories of companies were created.

According to Cascio *et al.* (1997) if the decision of reducing the employees' number is a successful strategy, it should result in an increase of the profitability measure, ROA or PM in our case. By one side we have the "DOWNSIZERS" that should satisfy the following criteria:

- Had made, at least once in a given year, a lay-off of 5% or more of their workforce (Cascio *et al.*, 1997; Suárez-González, 1999, Morris *et al.*,

1999). With this 5% we ensure that the downsizing decision was significant and permanent, and not a temporal fluctuation in the number of employees (Suárez-González, 1999).

The “NO DOWNSIZERS” are the remaining companies that:

- Had never made a lay-off of 5% or more. Firms without a single data of variation in employees are not considered.

However, and similarly to other authors that elected a ranking of the major companies according to some source, we elected all those companies that have at least 50 employees in years with data (Carswell, 2005), for in 2006 and 2007 official data revealed that the laid-off employees are mainstream in the medium and big firms, about 74% and 60% respectively. We considered that the employment level was the relevant variable for our goal, even more relevant than sales, once that a big company in terms of sales may not be big in terms of employees. Thus, the main reality of Portuguese downsizing acts in these medium and big sized firms. A total of 18359 Portuguese firms were obtained.

Table 2.5: Frequencies for employees

<i>N</i>	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996	1995	1994	1993
Valid	517	638	637	560	487	490	508	1085	851	928	511	220	49
Missing	17842	17721	17722	17799	17872	17869	17851	17274	17508	17431	17848	18139	18310
Kolmogorov-Smirnov	,000	,000	,000	,000	,000	,000	,000	,000	,000	,000	,000	,000	,000

We may verify, first of all, that the employee’s data show a lot more missing values than the financial ratios. We may also observe by the significance level of Kolmogorov-Smirnov Test that our data does not follow a normal distribution.

Due to the high number of missing cases, firms without any employee data for the 13 years were eliminated. Since we need two succeeding years of employees data to compute our employment variation, those firms that did not have those employees data were also eliminated. Any other type of combination, e.g. assets, plants/equipment, would eliminate a lot of cases, prejudicing further analyses. With these criteria we have a total sample of 1357 Portuguese firms (Appendix 2.1 - List of companies used in Chapter II).

2.4.3 Variables

Employees (Downsizing)

We defined our variables, employees, ROA or PM, sector or company size⁵, according to previous research, electing to our study the most used measures, which might be comparable to previous research.

There are two major groups of works with two major kinds for measuring downsizing. By one side, we have several studies which elected “announced layoffs” and other group of studies decided to choose the measure of downsizing through a percentage of reduction in employment level. We also adopted a percentage in employment level, due to several reasons. First of all, financial variables like ROA and PM are informed by firms through databases like Amadeus. Thus, we could obtain these data, for a great sample of Portuguese firms, by consulting Amadeus database. Secondly, not always the announced downsizing is implemented in the future with the same characteristics that

⁵ Variable defined by the number of employees. Legal support: Commission Recommendation of 6 May 2003, 2006/361/EC. Commission Recommendation of 6 May 2003, 2006/361/EC

were announced and sometimes, through legal interventions and negotiations, it doesn't occur. Our downsizing variable was obtained through a percentage of reduction in employment level: $(\text{employees}_n - \text{employees}_{n-1}) / \text{employees}_{n-1}$. If the obtained value is 5% or more (Cascio *et al.*, 1997; Suárez-González, 1999), we consider that the company in cause has implemented downsizing and it is labelled as a DOWNSIZER firm. The 5% value was adopted in order to assure that the reduction was significant and permanent and not a simple temporal fluctuation of the employment level (Suárez-González, 1999).

Profitability - ROA and PM

We used two measures of profitability: Return On Assets (ROA, %) and Profit Margin (PM, %). Our first profitability measure is ROA⁶ that “looks at profitability in relation to the dollars invested in a firm” (De Meuse *et al.*, 1994, pp. 515). And it is the most used variable by authors on previous research (De Meuse *et al.*, 1994; Mentzer, 1996; Cascio *et al.*, 1997; Chen *et al.*, 2001; Chalos and Chen, 2002; De Meuse *et al.*, 2004; Yu and Park, 2006; Carswell, 2005). We also used PM⁷ that “directly reflects the cost of producing each dollar of sales” (De Meuse *et al.*, 1994, pp. 515). Several authors also adopted them both at the same time (Carswell, 2005; De Meuse *et al.*, 2004; De Meuse *et al.*, 1994).

In table 2.6, the year where there were more cases of employees is 1996 (742 cases). With respect to ROA and PM, the best year in number firms, with less missing values is the year 2003 for both financial variables (1297 and 1287, respectively).

⁶ Amadeus ratio - Return on total assets (%) = ((Profit (Loss) before Taxation) / Total Assets)*100

⁷ Amadeus ratio - Profit Margin (%) = (Profit (Loss) before Taxation) / (Operating Revenue, Turnover)*100; Operating Revenue, Turnover = Sales(+stock variations + other operating revenues). Does not include VAT.

Table 2.6: Frequencies for employees, ROA and PM

	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996	1995	1994	1993
EMPLOYEES													
Valid	391	511	522	497	441	420	472	740	725	742	368	152	25
Missing	966	846	835	860	916	937	885	617	632	615	989	1205	1332
ROA													
Valid	952	1246	1297	1205	1093	1095	1094	1066	1069	1057	519	251	65
Missing	405	111	60	152	264	262	263	291	288	300	838	1106	1292
PM													
Valid	945	1239	1287	1194	1079	1084	1081	1055	1056	1046	517	249	63
Missing	412	118	70	163	278	273	276	302	301	311	840	1108	1294

By analysing our sample with respect to a normality analysis, we may conclude that our data reveal lack of normality. The critical ratios of asymmetry (Skewness) are much higher than 2 in absolute terms, except for ROA in the year 2004 and 1994. The data seem to be somewhat asymmetric, in fact, the predominance of negative critical coefficients indicate a negative asymmetry and biased to the left of the centre point. With respect to Kurtosis, the critical ratio indicates that all variables have values that are higher than 2, indicating a flat concerning the normal distribution (Appendix 2. 2).

2.5 ANALYSIS

In the analysis section, we proceed with two types of analyses. Firstly, with the purpose of a better characterization of the sample, we carry out some descriptive statistics of the final sample which consists of 1357 Portuguese firms with 50 or more employees. Of these 1357 firms, some downsized their workforce in at least 5% during a given year. In this descriptive subsection we may understand the importance of the reductions in the workforce size of Portuguese firms in a statistic base. Also we may be aware of which activity sector and company size have a more incident downsizing practice.

Secondly, we proceed with the analyses of the downsizing effects on profitability measures (ROA and PM), once that there are no empirical evidence of the Portuguese context concerning the downsizing effects on profitability.

Two main analyses are carried out. First, we analyse the transversal effects, by making a comparison between the DOWNSIZER firms and the NO DOWNSIZER ones in a given year, regarding their mean profitability measures. Based on our non-normal data, scale scales of our variables and different sizes (n) of the samples, we analysed the transversal differences between the two groups of companies, the downsized and the no downsized ones, along the two years after the downsizing occurrence (t+1 and t+2) and from the year before the downsizing, applying a “2 independent samples” procedure. We also analysed the longitudinal differences for the DOWNSIZERS, comparing their mean profitability measures from the previous year to downsizing with the year of the occurrence and the two following years after it. For the longitudinal effects we adopted a “related samples” procedure.

Non-parametric tests are used when assumptions required by the parametric counterpart tests are not met or are questionable (i.e., populations with normal distributions and variance homogeneity). The presupposition needed for this non-parametric tests is that the values of the variable in compare would be continuously distributed, which occurs in our case. We adopted nonparametric tests due to the lack of normality in the variables. These tests, applied to small and different samples, can be even more powerful than the parametric ones (Maroco, 2007).

While the parametric t test compares means of two independent samples, the Mann-Whitney test compares the localization centre of two samples, as a way to detect differences between the two correspondent populations, and it is based in the order of observations and in differences of the observations location. The Mann-Whitney test is rather preferred than the t test when there is normality violation or when there are small n 's and is based on the variable rank. In our case, we elect asymptotic levels for we had n 's higher than 10 (Pestana and Gageiro, 2005).

In the case of the related samples, Sign and Wilcoxon tests are nonparametric alternatives to t test. These tests allow the analyses of the differences between two conditions (like pre and pos test) in the same groups of individuals. In the cases where there were normality conditions, the t test is only a little more efficient than the Wilcoxon test, and both are considerably more efficient that the sign test (Pestana and Gageiro, 2005), reason why we adopted the Wilcoxon test.

2.5.1 Description of the Portuguese downsizing phenomena

Some descriptive analyses are presented for a better characterization of our sample.

Table 2.7: Frequencies for DOWNSIZERS versus No DOWNSIZERS

		<i>Frequency</i>	<i>Percent</i>	<i>Valid Percent</i>	<i>Cumulative Percent</i>
Valid	<i>NO DOWNSIZER</i>	804	59,2	59,2	59,2
	<i>DOWNSIZER</i>	553	40,8	40,8	100,0
	Total	1357	100,0	100,0	

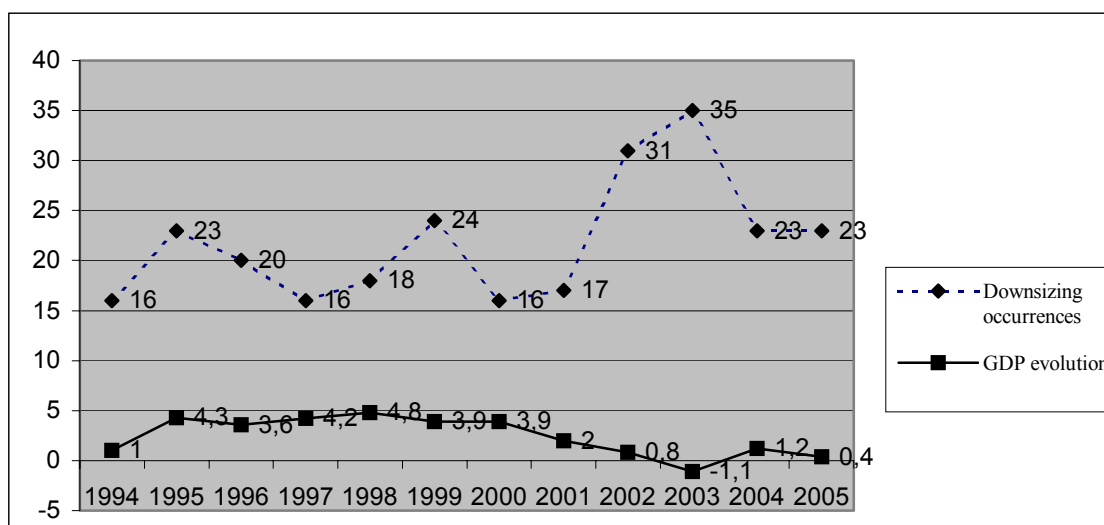
Our sample is mainly composed of NO DOWNSIZER companies (about 59%). The other 553 firms represent about 41%, being companies that had downsized their workforce in, at least, 5% or more, as it is showed in Table 2.7.

**Table 2.8: Frequencies for DOWNSIZERS versus No DOWNSIZERS
(OCURRENCES)**

	2005	%	2004	%	2003	%	2002	%	2001	%	2000	%	1999	%	1998	%	1997	%	1996	%	1995	%	1994	%	TOTAL	
NO DOWNSIZER	234	0,77	274	0,77	230	0,65	223	0,69	245	0,83	258	0,84	287	0,76	440	0,82	473	0,84	221	0,80	99	0,77	16	0,84		3000
DOWNSIZER	69	0,23	81	0,23	122	0,35	98	0,31	51	0,17	50	0,16	89	0,24	95	0,18	90	0,16	56	0,20	30	0,23	3	0,16		834
Total	303	1,00	355	1,00	352	1,00	321	1,00	296	1,00	308	1,00	376	1,00	535	1,00	563	1,00	277	1,00	129	1,00	19	1,00		3834

The previous table indicates that our DOWNSIZERS (553), downsized 834 times. Once that several firms downsized multiple times, the number of cases reported in table 2.8 exceeds the number of firms reported in table 2.7. The year 2003 was the year with the highest number of downsizing occurrences, 122 cases. Data are in the same line of the Portuguese economy respect to the year 2003. Portugal had in 2003 the worst GDP value (-1, 12%) since 1994 (OCDE, 2008), situation that may be seen in Graphic 2.1.

Graphic 2.1: GDP evolution versus Downsizing occurrences: Portugal



Source of GDP: <http://ocde.p4.siteinternet.com/publications/doifiles/302007011P1T003.xls> at 19th February 2008.

The year 1994 is the year with the lowest number of downsizings, but we must be aware due to this year is one of the highest in missing values terms.

Table 2.9: Number of times that companies have downsized and no downsized

		<i>Frequency</i>	<i>Percent</i>	<i>Cumulative Percent</i>
Valid	NO DOWNSIZING (0X)	804	59,2	59,2
	1X	382	28,2	28,2
	2X	99	7,3	7,3
	3X	44	3,2	3,2
	4X	21	1,5	1,5
	5X	5	,4	,4
	6X	1	,1	,1
	7X	1	,1	,1
	Total	1357	100,0	100,0

Some companies downsized more than once. There are a total of 382 companies which only implemented downsizing once, but there is, for example, one company that downsized seven times during the 13-year period. The total number of downsizing occurrences reaches 834.

Table 2.10: Number of employees laid-off by DOWNSIZERS

<i>Years</i>	<i>Employees laid-off</i>
1996 to 1997	-2882
1999 to 2000	-32058
2001 to 2002	-7838
2003 to 2004	-21590
2004 to 2005	-165482
Total laid-off	-229850

The year with a higher number of employees dismissed was that between 2004 and 2005, where 165482 employees were laid-off. The other problematic year was the year 2000, where 32058 workers were dismissed from their firms. The DOWNSIZER firms had totally laid-off 229850 workers in the last decade (aware that these firms are those which have 50 or more employees and reduced their workforce in 5% or more, at least once in the 13-year period).

At this stage of the sample characterisation, we proceed with two other descriptive analyses: by company size and by activity sectors.

Table 2.11: Frequencies of DOWNSIZERS and NO DOWNSIZERS by sector

<i>Groups of firms</i>			<i>Frequency</i>	<i>Percent</i>	<i>Valid Percent</i>	<i>Cumulative Percent</i>
NO DOWNSIZER	Valid	Primary	8	1,0	1,0	1,0
		Industry	403	50,1	50,1	51,1
		Services	393	48,9	48,9	100,0
		Total	804	100,0	100,0	
DOWNSIZER	Valid	Primary	8	1,4	1,4	1,4
		Industry	248	44,8	44,8	46,3
		Services	297	53,7	53,7	100,0
		Total	553	100,0	100,0	

According to table 2.11, we may conclude that DOWNSIZERS firms are mainly in the Services (297 firms) even though the other companies are mainly in Manufacture (403).

Table 2.12: Frequencies of DOWNSIZERS and NO DOWNSIZERS by company size⁸

<i>Groups of firms</i>			<i>Frequency</i>	<i>Percent</i>	<i>Valid Percent</i>	<i>Cumulative Percent</i>
<i>NO DOWNSIZER</i>	Valid	Medium sized	615	76,5	76,5	76,5
		Big sized	189	23,5	23,5	100,0
		Total	804	100,0	100,0	
<i>DOWNSIZER</i>	Valid	Medium sized	380	68,7	68,7	68,7
		Big sized	173	31,3	31,3	100,0
		Total	553	100,0	100,0	

As to the size of the DOWNSIZER firms, they are mainly medium sized (380), similar to what happened with NO DOWNSIZER companies (615), according to table 2.12.

2.5.2 The downsizing effects on the profitability of Portuguese firms

We proceed with the analysis of the downsizing effects on the profitability measures (ROA and PM) of Portuguese firms. To a given year t_i , we analysed the differences between the DOWNSIZERS and the NO DOWNSIZERS and we considered the effects along the two years after the downsizing occurrence from the year before the downsizing, by analysing transversal effects (Appendix 2. 3). We also analysed the longitudinal differences for DOWNSIZERS companies (Appendix 2. 4).

As we can observe in the table 2.13, we began our analysis in 1994, once that the database did not allow us to calculate values for DOWNSIZERS and NO DOWNSIZERS companies of the year 1993 (we weren't able to identify the

⁸ The sample is only composed of firms with 50 or more employees, a reason why there are no micro and small sized firms.

employee's variation from 1992 to 1993). The same problem, due to time composition of database from 1993 to 2005, occurred with the cells filled with "NDA".

Table 2.13: Significant differences of transversal effects on ROA and PM for DOWNSIZER and NO DOWNSIZER firms

<i>Year (t)</i>	<i>Variables</i>		<i>t-1</i>	<i>t</i>	<i>t+1</i>	<i>t+2</i>	<i>Year (t)</i>	<i>Variables</i>		<i>t-1</i>	<i>t</i>	<i>t+1</i>	<i>t+2</i>
1994	ROA	DOWNSIZERS versus No DOWNSIZERS	-	-	-	-	1994	PM	DOWNSIZERS versus No DOWNSIZERS	+	+	-	-
1995	ROA		-	-	+	-	1995	PM		-	-	+	+
1996	ROA		-*	-*	-*	-	1996	PM		-*	-*	-	-
1997	ROA		-*	-	-	-	1997	PM		-*	-	-	+
1998	ROA		-	-*	-*	-	1998	PM		-	-*	-	-
1999	ROA		-*	-*	-*	-*	1999	PM		-*	-	-*	-
2000	ROA		-*	-*	-	-	2000	PM		-*	-*	-*	-
2001	ROA		-*	-*	-	-	2001	PM		-*	-*	-	-
2002	ROA		-*	-*	-	-	2002	PM		-*	-*	-	-
2003	ROA		-*	-*	-	-	2003	PM		-*	-*	-	-
2004	ROA		-*	-*	-	NDA	2004	PM		-*	-*	-	NDA
2005	ROA		-	-	NDA	NDA	2005	PM		-	-	NDA	NDA

NDA – No Data Available.

* Sig. <0,05

- Lower mean value of DOWNSIZERS with respect to NO DOWNSIZERS.

+ Higher mean value of DOWNSIZERS with respect to NO DOWNSIZERS

The results (Table 2.13 and Appendix 2. 3) indicate that there are significant differences between profitability ratios from DOWNSIZERS and NO DOWNSIZERS in the prior year to downsizing. We may conclude that these differences in ROA and PM have a pattern and are significantly negative, thus showing that DOWNSIZERS have lower financial ratios than NO DOWNSIZERS firms, and these poor firms probably have more propensity to downsize their workforce in the future. These results rationalize the downsizing made in the t year, confirming our H1 and H2.

Concerning the differences in the year of downsizing (t), we may conclude that DOWNSIZERS always have lower performance ratios than their counterparts (exception made for the case of PM in 1994). Though these differences are not always

significant, from the year 2000 to 2004 both profitability measures are significantly different. Thus, DOWNSIZERS maintain their disadvantage with respect to NO DOWNSIZERS firms in the downsizing year.

As to the two succeeding years, DOWNSIZERS always have lower profitability than the NO DOWNSIZERS firms ones (exception made for one year of ROA and three years of PM in the forty-two analysed years). Nevertheless, these differences are mostly not significant and we can not corroborate our 3rd and 4th hypotheses.

Table 2.14: Resume of longitudinal effects for DOWNSIZER firms

<i>Year</i>	<i>Variables</i>	<i>t</i>	<i>t+1</i>	<i>t+2</i>
t-1	ROA DOWNSIZERS	-	+	+
	PM DOWNSIZERS	+	+*	+

* Sig. <0,05

+ Higher mean value with respect to t-1 year.

- Lower mean value with respect to t-1 year.

We also analysed the longitudinal effects for the DOWNSIZERS firms (Table 2.14 and Appendix 2. 4), comparing their mean profitability measures from the previous year to downsizing with the year of the occurrence and the two following years. The considered *t* year is when the first downsizing occurred, for each DOWNSIZER firm. After this identification of the *t* year procedure, we gathered all the DOWNSIZERS firms to proceed with the longitudinal analysis from the previous year of downsizing (t-1) to the second year after (t, t+1, t+2).

According to Table 2.14, we may verify that for DOWNSIZERS companies, the results do not allow us to confirm our H5 and H6, due to the insignificant differences (except in the case of PM_{t-1} compared with PM_{t+1}). We may conclude that PM has some short term

positive effect but is not sustainable and, in the second year after, it is not significant. These results are coherent with those of Wayhan and Werner (2000) where workforce reductions significantly improved subsequent financial performance, particularly in the short term but inhibit long term adaptability (Cameron, 1994) with undesirable consequences in the long term profitability level.

2.6 CONCLUSIONS

Our sample of the Portuguese companies with at least 50 employees in one of the years is composed of 1357 companies. There are 553 companies that chose to downsize their workforce in 5% or more in at least one of the 13-year periods. The remaining 804 firms never downsized. 553 firms that downsized their workforces more than once, give us a total of 834 occurrences. The year 2003 is the year with the highest number of downsizing occurrences made by DOWNSIZER firms (122). Data are in the same line of the Portuguese economy respect to the year 2003. Since 1994 that Portugal never had a such bad GDP value. The majority of DOWNSIZERS belong to the services sector (297 firms) and are medium sized companies (380). The NO DOWNSIZERS, are mostly medium sized, similar to DOWNSIZERS and belong mainly to the industry.

Being the profitability effects of downsizing practices the main issue of our study, we may conclude that transversal differences in ROA and PM have a pattern and are significantly negative, thus showing that DOWNSIZERS have lower financial ratios than NO DOWNSIZERS firms, and these poor firms probably have more propensity to downsize their workforce in the future. These results justify the downsizing made in the t year, confirming our H1 and H2. In the two succeeding years, we may conclude that

there are not patterned significant differences on profitability from those companies that downsized and those that did not. After downsizing practices the financial performance of DOWNSIZERS did not reach the aim of over performing firms which implemented it. The analysis of the mean differences in financial performance demonstrate a strong evidence. The firms which laid-off employees do not show significant financial improvements when compared with those firms which did not reduce their workforce. Rather, results suggest that firms which laid-off employees continue to perform in a considerably poorer way than other firms do, even though in some cases there is no statistically significance level.

We may then conclude that in the prior year to downsizing, DOWNSIZERS firms have lower financial indicators than NO DOWNSIZERS companies, confirming our H1 and H2. In the two periods after downsizing, DOWNSIZERS always have lower ROA and PM levels than the NO DOWNSIZERS firms (exception made for one year of ROA and three years of PM in the forty-two analysed years). However, we can not corroborate our 3rd and 4th hypotheses, due to the no significant differences. These negative and bad results probably motivated the practice of the lay-off in the next year. With reference to the longitudinal effects for DOWNSIZERS firms, the results do not allow us to totally confirm our H5 and H6, due to the no significant differences. We may say that PM has some short term positive effect but is not sustainable and in the second year after it is not significant.

The substance of this study is that it has a pioneering character about the Portuguese reality of downsizing effects on profitability. The rational paradigm and the economic perspective, the primary and central explanation for downsizing, is not totally

accomplishing the bottom-line objectives. The financial distress before downsizing led companies to downsizing. Our results may confirm this fact. However, with our results, after the lay-off, the Portuguese firms that implemented it, did not completely reach the main goal of improving profitability measures. The economic excuse can not support these practices. Indeed, DOWNSIZERS and NO DOWNSIZERS firms had a similar performance behaviour after the downsizing.

An isolated action of laying-off can not be proclaimed as the saviour practice for financial distress. When implemented without the presence of other strategies, like “grenade type”, downsizing generally has negative consequences (Cameron, 1994). Downsizing by itself can be viewed as a “corporate anorexia” (Hamel and Prahalad, 1994). It seems that it is not enough to downsize. Much more has to be done to accompany this restructuring strategy in order to be successful. “Downsizing, the equivalent of corporate anorexia, can make a company thinner; it doesn’t necessarily make it healthier” (Hamel and Prahalad, 1994, pp. 12).

Firms should make a better use of their employees so as to generate higher financial indicators. It would also be interesting for them to act in another resource instead of only dismissing personnel.

2.7 FUTURE RESEARCH AND LIMITATIONS

Future research should consolidate this study, in terms of other variables that not only the accounting ones, trying to measure efficiency and productivity, for example, and should regard for a following long term effect. Also the effect on stock market value

remain important and should be studied in future researches. Since that data source allows data from other countries, we should make a contrast with distinct samples.

We also should study a sample of *distressed* downsized firms before downsizing and compare them with the *healthy* ones, to analyse their reaction respect to the unfavourable results and to compare their behaviour with the healthy ones.

Once it is not clear that companies, which implemented downsizing practices, had reached the expected results and according to several studies, downsizing affects survivors who remain in the downsized firm. If downsizing negatively affects survivors, it is logical that their performance at work will be affected in a similar way and as a final consequence: the profitability of DOWNSIZERS firms will obviously adversely suffer. It would be interesting to merge the psychological contract with the economic perspective and to verify if there are any distinct effects from the ones presented in this study. In fact, future research should not be limited to the bases of economic perspective surrounded by ambiguity about its bottom-line effectiveness. Since we adopted the economic perspective, other perspectives should complement the analysis.

The main limitation of this study is the unavailable data, specially the case of the employment data. It is almost an ignored data in the database, contrarily to the accounting data available. Firms should always report this data to databases and consider it as important as the financial ones.

2.8 MANAGEMENT IMPLICATIONS

Downsizing is not something unfamiliar for the Portuguese managers. The specific lay-offs, so much in vogue, seem to be, in fact, a common management practice to reduce costs and achieve a better financial level.

Thus the consequences from these lay-offs should be carefully understood. Results seem to indicate that DOWNSIZERS firms do not improve their profitability measures with respect to NO DOWNSIZERS companies. Moreover, the pos-period of the DOWNSIZERS firms does not improve, for a sustainable and continuous way, their accounting ratios regarding the previous year of lay-off. Managers should not expect “magic numbers” on their profitability measures in the first two years after the lay-off occurred.

As an isolated practice, it does not reach the theoretical purposes. In the cases where this practice is really necessary, managers should include it in a global strategic plan which does not only affect the workforce size but also is applied along with some alternative and complementary practices.

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CHAPTER III

THE DOWNSIZING EFFECTS ON SURVIVORS: PERCEIVED JOB INSECURITY, ORGANIZATIONAL COMMITMENT AND INNOVATIVE BEHAVIOUR

3.1 INTRODUCTION

The downsizing phenomenon has become more intense over the last two decades, and has affected a considerable part of the business world. There are several empirical studies about its effects, ranging from individual to organizational ones. In the latter case, the consequences are in terms of financial performance (Morrow, *et al.*, 2004) or stock market value (Worrell *et al.*, 1991; Wertheim and Robinson, 2000). In what concerns to individual consequences, they are mainly affecting the survivors, the remaining employees who were not laid off (Brockner *et al.*, 2004), like job insecurity, innovation propensity and individual motivation, among others (Sahdev, 2003; Reisel and Banai, 2002; Mishra, 1996; Fisher and White, 2000). The theme of innovation has also been greatly developed in the recent years (Johannessen *et al.*, 2001), in particular the case of the innovative behaviour of a company's workers and the factors that determine that behaviour (Kleysen and Street, 2001; Scott and Bruce, 1994; Jong and Kemp, 2003). However, no other study has examined the relation between innovative behaviour and downsizing practice.

The innovative behaviour is essential to keep the companies in the competitive business world. On the other hand, downsizing practices are appearing every day as a management practice to reduce costs and to solve economic problems from companies. Thus the question arises: is there any relation between downsizing practices and workers' innovative behaviour?

Several negative consequences from downsizing are related to stock market value and the company's financial performance. The market reacts negatively to downsizing when the downsizing has got financial reasons (reactive), since that poor results before the announcement point to a problematic situation and are interpreted as a durable sign of "seriousness" (Worrell, *et al.*, 1991; Iqbal and Shekhar, 1995; Elayan *et al.*, 1998; Wertheim and Robinson, 2000). When analysing the negative effects on the account results, the various studies by Morrow *et al.*, 2004 and De Meuse *et al.*, 1994 are some examples.

The main goal of this research is to analyse the causal relations between some of the effects of downsizing, such as perceived job insecurity, lack of organisational commitment and innovative behaviour (further INS, LC and IB). Despite of other effects on survivors, we elected these constructs due to their frequency in previous studies about the consequences of downsizing, and in the case of innovative behaviour, due to that companies need to innovate, in the search of their long term survival and to reach a competitive position (Tidd *et al.*, 2001; Simon *et al.*, 2002). We developed a model of how downsizing influences simultaneously perceived job insecurity and lack of commitment; and their relation to innovative behaviour of survivors. Given that we elected two different types of firms, some that suffered a downsizing effect (DOWNSIZERS) and some others that did not (NO DOWNSIZER), we proceed with an analysis (multi-group analysis), to verify if the company type systematically modifies the relation between all the constructs (moderate effect).

Our work consists on a pioneering analysis of the simultaneous relations between some of the effects of downsizing. One of the challenges organizations face nowadays is to

reach (and keep) an effective innovativeness level, maintaining both their sustainability and their performance adequate to the market expectations. Although the effect of radical forms of innovation is not clear, the innovative behaviour is an essential part in many modern initiatives that intend to improve firm performance by incremental innovation (Jong and Kemp, 2003). Even though it is a fact that innovative behaviour is an extremely contemporary theme, there are only a few studies that relate the perceived job insecurity and lack of commitment with the creative or innovative behaviour. Therefore, we decided to empirically prove these relations.

Our final sample consists of 224 valid surveys, based on a self-selection procedure⁹, from 4 Portuguese firms (IBM, PLASDAN, INAMOL, CSA) during 2005. We adopted a structural equations modelling focus, since we are analysing simultaneous relations between constructs, in a given moment of time. We had also exanimate the moderate effect of “type of company” on all direct impacts among constructs.

In the following section we present the theoretical background, mentioning the main authors and studies about the relevant constructs. Afterwards, hypotheses and initial model are presented. The research methodology and data analysis are going to be presented. followed by results and conclusions. This chapter ends with the management implications, future research lines and limitations on this study.

⁹ We can consider the collected sample as randomly extracted, since all individuals from the population had the same odd to belong to the sample.

3.2 THEORETICAL BACKGROUND AND HYPOTHESES

Research on the themes of job insecurity, organizational commitment and innovative behaviour on human resources is vast and have been largely studied in the human resource management field. Also, the sub theme of these individual effects driven from downsizing actions, was the key point in several studies and it is also in ours. The individual effects may be considered a type of downsizing consequences concerning the survivors. When a firm implement a downsizing, their human resources will be most likely affected by stress, lack of motivation, commitment or trust, or else will also perceive insecurity relatively to their job in the company. Some of the most studied constructs in this research filed have been the perceived job insecurity, organizational commitment and, most recently, the innovative behaviour in an massive competitive business world.

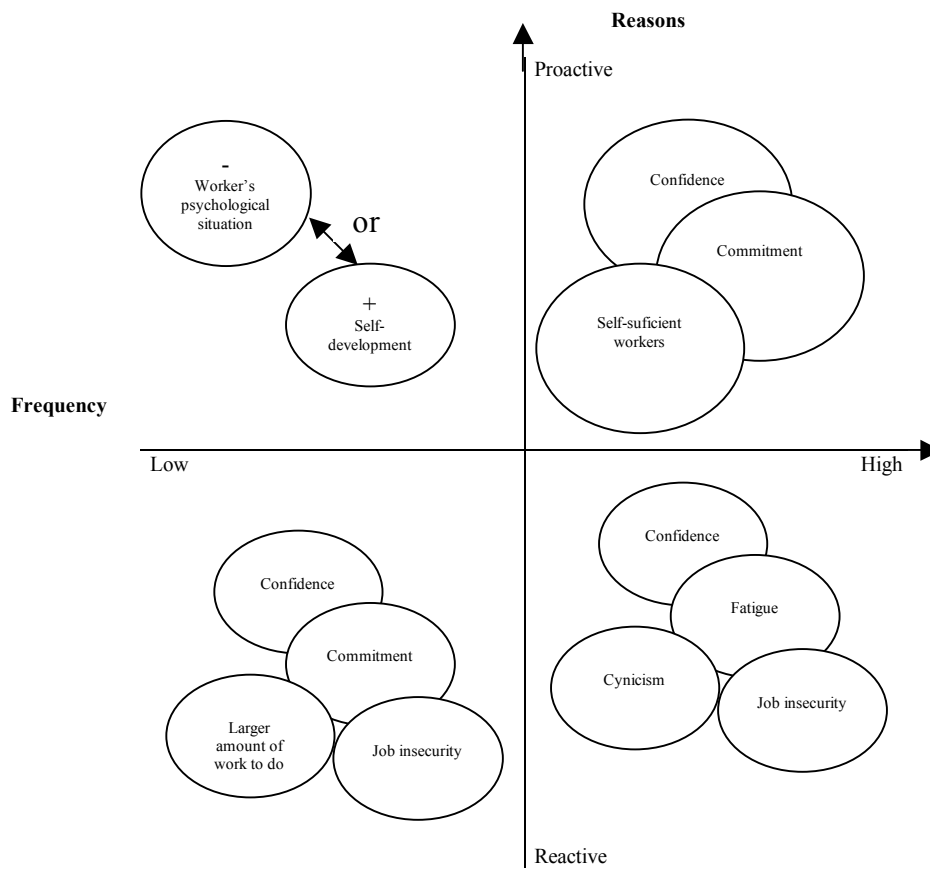
3.2.1 Individual effects

Various studies conducted at the individual level of analysis, identified distinct consequences in survivors (see Chapter I “Individual effects”). For example, survivors have been shown to respond with lower commitment level (Sahdev, 2003; Ugboro, 2003), with insecurity respect to their jobs (Sahdev, 2003; Ugboro, 2003) or even with lower creative / innovative behaviours (Fisher and White, 2000; Pech, 2001). Also an association between job insecurity and lower organizational commitment was found (Hartley, 1998). The existent literature is reviewed in the following part.

3.2.1.1 Job insecurity

As a result of the changes produced by downsizing decisions, job insecurity emerged as one of the most important topics studied among scholars and researchers (Sverke and Hekkreb, 2002). Job insecurity can be defined as a “perceived powerlessness to maintain desired continuity in a threatened job situation (Greenhalgh and Rosenblatt, 1984, pp. 438). The term insecurity includes measures of perceived threats on the continuity of employment, employment characteristics and the feeling of being unable to control and prevent the possible threats (Ashford *et al.*, 1989, Ugboro, 2003). Thus, downsizing increases job insecurity (Ugboro, 2003) and reflects in the loss of firm’s capabilities, learning and innovation, regardless of what the past has offered. Job insecurity and lack of commitment are further downsizing results and some factors may be related to the level of impact of downsizing on survivors, where the reactive is the worst concerning the negative effects, as in the next figure (Sahdev, 2003).

Figure 3.1: Factors related to the level of impact of downsizing on survivors



Source: Adapted from Sahdev (2003).

3.2.1.2 Organizational commitment

Organizational commitment is not a recent topic. In fact, it is commonly studied matter since the 30's (e.g. Barnard, 1938). This topic can be viewed as the willingness of the worker to devote energy and loyalty to an organization (Kanter, 1968). Porter *et al.* (1974, pp. 604) defined it as “a strong belief in and acceptance of the organization's

goals and values, a willingness to exert considerable effort on behalf of the organization, and a definite desire to maintain organizational membership”. To sum up, organizational commitment is the extent of an individual’s commitment to an organization.

Commitment is often measured through three variables: affective, continuance and normative components (Ugboro, 2003, Meyer and Allen, 1991). The affective component refers to emotional questions and identification with the company, where the employees with strong affective commitment remain in their company because they want to and this component shows one’s strong desire to be identified with a particular organization and it is induced by an employee’s emotional attachment to, identification with, and involvement in an organization for its own sake, due to value congruency and a desire to see the organization succeed. The continuance component has to do with one’s decision to remain in an organization because of personal investments one has made as a result of years of employment in an organization. It also results from perceived difficulty in finding a comparable job elsewhere. An employee with normative commitment feels obligated to remain with an organization despite better employment opportunities elsewhere, since cultural value systems play a key role in normative commitment.

3.2.1.3 Innovative behaviour

Innovation has become an important issue to all organizations in the last decades, consequence of the technological advance and its normal/common use. It is not possible to study the innovative behaviour of workers without referring the innovation topic.

Lundvall (1992) defines innovation as a research and exploration process that generates new products, new techniques, new organizational forms and new markets. It may be simply defined as a process that involves the generation and implementation of ideas (Scott and Bruce, 1994). Generating and exploiting ideas implies actions directed to this goal, namely, innovative behaviour. Innovative individual behaviour can be defined as the individual actions directed to the generation, introduction and/or application of beneficial innovations on some level of the organization (West and Farr, 1989). In this definition we can observe stages, not only the generation of ideas or solutions, but also the application in terms of productive use. Despite this, both stages are considered innovative behaviour.

Innovative ability is something that is fundamental for innovation (Jong *et al.*, 2001), and that refers to the employee's ability to generate ideas and develop new or better products, services or technologies, work processes or markets (Jong *et al.*, 2001). The ability and the behaviour of workers are essential to the innovation process, owing to their motivation, capabilities and to the knowledge needed for the process. Studying innovative behaviour in a work environment is a very complex task due to the difficulty in validating the criteria (Scott and Bruce, 1994). This innovative behaviour acts as a key factor in incremental innovation, although its effect on radical innovations is not so clear, according to Jong and Kemp (2003). The concept is based on originality at different levels: the development of new products, ideas or technologies, changes in procedures or the application of new ideas or technologies in the production process, aiming to achieve efficacy and efficiency (Kleysen and Street, 2001).

Innovation is a process divided into different stages, with different activities and different individual behaviours, needed at the different stages and the innovative behaviour is a result of four interacted systems: individual, leadership, teamwork and climate to innovate (Scott and Bruce, 1994). The individual innovative behaviour includes several practices (Kleysen and Street, 2001). Five constructs were identified to categorize the behaviour associated with individual innovation. Out of those five, the first two are related to the initial phase of the process and the others to the implementation phase of innovations. The constructs are: opportunities exploration (identifying new opportunities), generativity (generating beneficial changes for the organizations, persons, products and/or processes), championing (socio-political behaviours involved in processes of innovation, which are essential to realizing the potential ideas, solutions and innovations), formative investigation (giving form to and fleshing out ideas, solutions and opinions and trying them out through research) and application (working at making innovations a regular part of business as usual). Other authors presented innovative behaviour as a one-dimensional concept (Scott and Bruce, 1994). It can be concluded from the literature review on innovative behaviour that it is a fairly undeveloped theme owing to the complexity of the task (Scott and Bruce, 1994), and that studies concerning the effects of downsizing on innovative behaviour are almost non-existent. Some of them are now presented.

Personal networks are the way how human resources acquire much of the information needed for the organisations innovation (Macdonald and Piekkari, 2005) and innovators create different networks to reach particular goals, specifically, networks around ideas, information and solution gathering or just about what is happening in a specific area (Cooper, 2005). When with downsizing several informal networks disappear, it

damages the innovative capacity (Dougherty and Bowman, 1995). If those networks are necessary for innovation, reducing the workforce size of a firm will negatively affect the innovation process.

With respect to organizational memory, it can be defined as the information stored throughout the organization's history and which can be used to make decisions (Walsh and Ungson, 1991). One of the five places where this memory can be stored is in the individual. When downsizing forces persons to leave, that organizational memory, or at least a part of it, will be taken with them (Meyer *et al.*, 2002). Individual memories are the essential pieces of the organizational memory, and when we lose a significant individual memory that was part of a collective one, it creates a fracture in the organizational and collective memory, with negative consequences (Fisher and White, 2000). This loss of the individual memory occurs with a workforce reduction.

Applying this to the innovation process, downsizing can seriously damage the learning capability of organizations. Since innovation is a process that involves the generation and implementation of ideas over time, it becomes obvious that the innovation process would become penalized through the loss of organizational memory disappearing with the individuals who left. The result of employee's work tends to increase over time when there is clarity in the organization, and that this increase is greater when clarity is combined with higher job security. Analysing "innovative behaviour performance", characterized by the permanent search for and implementation of new ideas, they showed how the low motivation, morale, commitment and loyalty caused by downsizing affect this process which gives rise to new products, new techniques, new organizational forms and new markets (Fried *et al.*, 2003). Moreover, layoffs may be

perceived by workers as a violation of the psychological contract between them and their organization, resulting in decreased trust and greater stress in the workplace (De Meuse *et al.*, 2004). Consequently and accordingly to the literature, layoffs are associated with increased job insecurity, decreased commitment and productivity from survivors (Sahdev, 2003; Brockner 1992). Such negative effects may be more costly for high-involvement workplaces, as these workplaces rely expressly on employee involvement and motivation (Zatzick and Iverson, 2006).

Innovative workplaces may be negatively affected by layoffs once that they need a strong involvement of workers to play efficiently the ideas role in the productivity scene to achieve the innovative behaviour demanded to innovation (Zatzick and Iverson, 2006).

3.2.2 HYPOTHESES

The attention given to the job insecurity perceived by workers, respect to their employment situation, has come out in the last years accompanying the downsizing trend all over the world (Sverke and Hekkgreb, 2002). When downsizing occurs, a threatened employment situation takes place and workers perceive that it is not stable. Their insecurity levels, respect to the employment situation, increase as a consequence of the threat full context of downsizing that they are living (Ugboro, 2003). Other workers that are not embedded in a downsizing context, do not increase their insecurity levels, once their employment situation is not being threaten by a downsizing. Consequently, we propose to contrast the following hypothesis:

H1: *The job insecurity (INS) is higher among workers in downsizing contexts.*

The organizational commitment assumes the perfect level when workers identify themselves with the organization being totally attached to it. Similarly to what occurs with job insecurity, the organizational commitment also increases as a downsizing effect (Sahdev, 2003). The willingness of employees to be loyal respect to the firm is negatively effected once managers decide to reduce their workforce size. Workers, when facing a reduction in the employment level, decrease their motivation to identify themselves with the organization's goals (Sahdev, 2003), which accounts for the following hypothesis:

H2: The lack of organizational commitment (LC) is higher among workers in downsizing contexts.

The cut of the informal network of relations, necessary for innovation, is a consequence of downsizing (Dougherty and Bowman, 1995) and it can also seriously damage the learning capability of organizations (Fisher and White, 2000). A part of the organizational memory, acquired along the years, is taken by workers, which were forced to leave the firm as a result of a downsizing process (Gregory, 1999). As a result of this departure of workers, the complex process that conduces workers to their innovative behaviour will be affected, by destroying the network of relations between workers and by losing part of the organizational memory that each laid-off employee takes with him. Thus, the laid-off human resources will take with them much of the information needed for the organisations innovation and will not sustain the needed informal networks. This situation does not occur in firms that decide not to downsize their workforce. Thus, we hypothesise the following:

H3: *The innovative behaviour (IB) is lower among workers in downsizing contexts.*

About the causal relations we first consider it is related with perceived job insecurity (Greenhalgh and Rosenblatt, 1984; Ashford *et al.*, 1989). Several studies concluded that the organizational commitment were negatively affected by the job insecurity (Hartley, 1998; De Witte and Naswall, 2003). Also Ashford *et al.* (1989) referred to the lack of empirical attention given to the job insecurity resulting from downsizing, restructuring and mergers. These authors, using the study by Greenhalgh and Rosenblatt (1984) as a basis, concluded that insecurity was associated with the decrease in commitment. Literature points out that job insecurity has negative consequences for the organization, once it reduces commitment, inducing in workers the intention of leaving (Reisel and Banai, 2002). In this study we intend to verify that the perceived job insecurity, by workers, has a positive impact on the lack of organizational commitment, as shown in the following hypothesis:

H4: *The perceived job insecurity (INS) has a positive impact on lack of organizational commitment (LC).*

The generation and implementation of ideas that an innovation process demands (Scott and Bruce, 1994) call for suitable innovative behaviour from the employees. They need a suitable level of motivation, capability and knowledge for the innovation process to be successful and reach what is known as innovative ability (Jong *et al.*, 2001). If the worker has generated maximum results when there is clarity and job security (Fried *et*

al., 2003), with the appearance of job insecurity the innovative behaviours of workers from innovative organizations may be negatively related. We thus present the fifth hypothesis:

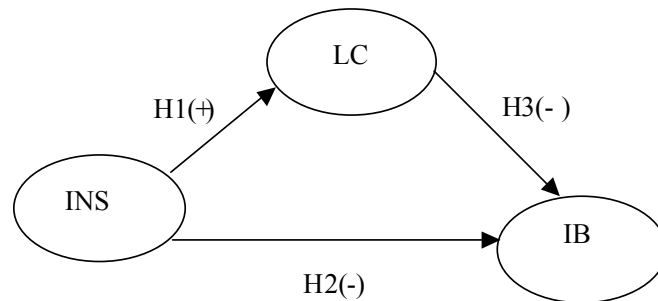
H5: *The perceived job insecurity (INS) has a negative impact over the innovative behaviour (IB).*

Organizational commitment is connected to the degree to which the employees identify themselves with the goals of their organization. Hence, in companies where the goals are innovative, committed employees should devote their energy to the firm (Kanter, 1968) and make an effort to achieve the organizational goals, adopting the necessary innovative behaviours. However, in those cases where the level of organizational commitment diminishes it may be negatively related with the innovative behaviours. Since job insecurity is associated with a lower level of organizational commitment (Hartley, 1998; Reisel and Banai, 2002), we summarize these arguments in the following hypothesis:

H6: *The lack of organizational commitment (LC) has a negative impact on the innovative behaviour (IB).*

Figure 3.2 represents the theoretical model that reflects the previous hypotheses (H3, H4 and H5).

Figure 3.2: Theoretical model – Relations between perceived job insecurity, lack of organizational commitment and innovative behaviours



Since the job insecurity, organizational commitment and innovative behaviour have been issues studied on human resource field, the particular case of downsizing brought them, again, to the research field on its consequences on survivors. These constructs had been shown to be negatively affected in such downsizing environments (Sahdev, 2003; Fisher and White, 2000; Ugboro, 2003). Thus, firms where a reduction of the workforce occurred will have significantly different impacts between the constructs than those firms that were not affected by such organizational practice. From this analysis, the following hypothesis should apply:

H7: *The type of firm (DOWNSIZER or NO DOWNSIZER) affects systematically the structural impacts between the constructs.*

3.3 METHODOLOGY

3.3.1 Data and sample

We collected data from four Portuguese companies: *INAMOL*, *PLASDAN*, *CSA* and *IBM*. These four companies were chosen because of their particularities: they represent

companies without downsizing strategies in their history (INAMOL, PLASDAN, CSA), and the case of IBM because of its downsizing announcement back in 2005. Since we intend to verify the 2 types of company, they were vital to our study. Once the literature had taken account of the downsizing in terms of layoff announcements (De Meuse *et al.*, 2004), the IBM announcement became a critical factor in the realization of our study in this company. Surveys were randomly delivered among employees during 2005. Our final sample, concerning valid surveys, is composed by 50 surveys of INAMOL, 12 of PLASDAN, 74 from CSA and 88 from IBM. Our total and final sample consists of 224 valid surveys.

The *INAMOL* operates in the mould industry and employs 85 workers. *PLASDAN* produces injection machines and builds high-tech moulds for the telecommunications industry. 45 workers compose its workforce. CSA is a Portuguese insurer company and employs 585 employees. IBM is one of the largest technological company worldwide. There is a subsidiary from IBM in Portugal since 1938 and it has 515 workers (2005). IBM was the only firm that engaged in a downsizing. *IBM Portugal* reduced its number of employees by 6% in 2004, and in the first semester of 2005 IBM further announced a downsizing in the media. According to the firm, the downsizing effect was not as strongly felt in Portugal as it was in some other countries. The three remaining companies were not involved in any kind of downsizing strategies in the analysed years.

Table 3.1 provides some data relating to IBM Portugal, INAMOL, PLASDAN and CSA.

Table 3.1: Basic data for companies

Year	IBM			INAMOL			PLASDAN			CSA		
	2003	2004	Δ	2003	2004	Δ	2003	2004	Δ	2003	2004	Δ
			(%)			(%)			(%)			(%)
Employees	547	515	- 6	77	85	10	45	45	0	586	585	0
Net profit (€)	21.788.777	18.532.667	- 15	117.577	122.655	4	87.550	114.571	30	10.120.000	10.896.000	8
Sales (€)	236.511.390	269.679.687	15	5.033.569	5.314.588	5	10.449.789	10.395.931	-0,5	13.767.000	14.925.000*	8

Source : IBM Portugal, INAMOL , PLASDAN and <http://www.acornet.pt/acoreana3/asp/main.asp>.

*-Operational cash-flow

3.3.2 Variables

According to the reviewed literature, described above, as well as to a few in depth interviews with academic and professional specialists, and also taking some pre-test questionnaires into account, we elaborated a final questionnaire (Appendix 3.1) that adapts the items used in studies from *Ugboro* (2003), *Reisel* and *Banai* (2002), *Kleysen* and *Street* (2001) and *Jong* and *Kemp* (2003). We applied a 5 points Likert-type scales (varying from “Very unlikely – Very likely”, “Strongly agree – Strongly disagree” or “Unusual – Very Frequent”). We also included a data section identification. The questionnaire has four parts. In the first part we gathered information related to job insecurity; in the second one commitment was the subject and the third part was about innovative behavior. The fourth part comprised questions in order to characterize the respondents. Job insecurity (INS) was measured with items v1.1 to v1.10 in its three components: perceived job feature (PJF: v.1.1 to v1.3), perceived threat to one’s total job (PTTJ: v1.4 to v1.8) and perception of powerlessness (PP: v1.9 and v1.10). The commitment (LC) construct was measured with the items coded v2.1 to v2.10, where

the three components of commitment (affective: “AC”, continuance: “CC” and normative: “NC”) were measured by the items v2.1-v2.4, v2.5-v2.7 and v2.8-v2.10, respectively. The innovative behaviours (IB) were measured with items v3.1 to v3.13 (see Appendix 3.2 - List of variables and Sample description). We have also created two groups of firms, DOWNSIZER and NO DOWNSIZER, if they have announced downsizing or not, respectively.

3.4 ANALYSIS

In this section we develop our model reflecting simultaneous relations of perceived job insecurity, lack of commitment and innovative behaviour (Figure 2.2) in order to corroborate H4, H5 and H6. Levels of each construct are computed from “weight latent scores” from the structural model. From these we will obtain means for two contexts/firms: with (DOWNSIZER) and without announced downsizing (NO DOWNSIZER). The values will be compared in order to corroborate H1, H2 and H3. Finally, the difference among impacts will be inspected with a multi-group analysis (H7).

The most suitable methodology for analysing simultaneous relations is structural equations modelling. We intend to corroborate some relations based on previous literature. With this methodology we may contrast our empirical model and re-specify it (Hair *et al.*, 1999), in order to obtain the best model to describe the simultaneous relations between our constructs. First, using SPSS 15.0, we carried out an exploratory factor analysis, in order to see how the variables were grouped and eliminated the variables least adjusted to our theoretical model. We verified the reliability of the constructs with the *Cronbach's Alpha* (Cronbach, 1951; Hair *et al.*, 1999). The

magnitude and significance of the simultaneous regression coefficients were estimated with AMOS 7.0 software.

Since the literature assumes that survivors of downsizing strategies present job insecurity, lack of organizational commitment and deficit innovative behaviour, we may assume that workers of firms that did not suffer any downsizing strategy will have different levels of these constructs. “Type of company” classification was based on firms that suffered an announced downsizing (the IBM case: DOWNSIZER) and those that did not suffer the consequences of a downsizing environment (INAMOL, PLASDAN and CSA: NO DOWNSIZER). To analyse if the company that implemented downsizing manifests significant distinct impacts to those which did not implement downsizing, we have also made a multi-group analysis. Multi-group analysis calculates parameters separately for the two groups of firms, as well as the fit measures for the considered groups simultaneously.

3.5 RESULTS

Univariant analyses and normality of the variables

When we adopt ordinal scales, normality is very unusual. In our study we used, most of all, five points scales (ranging from 1 –5) and according to Joreskog and Sorbom (1993) a variable needs a fifteen points scale (ranging from 1 – 15) to be approximately a continuous variable. In our study we have a non-normality distribution of data. We though proceed with the analysis since we can observe *a posteriori* the parameters’ stability through the bootstrap procedure (Hair *et al.*, 1999).

Exploratory and confirmatory factor analysis

We adopted an exploratory factor analysis to see how variables were grouped. Factor analysis and depuration were done according to the correlation matrix analysis, and also to the factor scores and *Cronbach's alpha* values for reliability issues (Cronbach, 1951).

According to Bagozzi and Yi (1988) in the exploratory factor analysis the desirable factor scores are higher than 0.5. In the case of variables V3.7, V3.13, V3.3, V2.7, V2.5 and V.2.6 we had smaller scores, a reason for which we did not consider these variables. Also due to crossed saturations in distinct factors simultaneously.

Table 3.2: One-dimensional and reliability analyses in an exploratory and confirmatory factor analysis (by construct)

<i>Construct</i>	<i>Variables</i>	<i>Factor analysis</i>	<i>Confirmatory analysis (partial)</i>	α
PJF (perceived job feature)	v.1.1 v.1.2 v.1.3	1 factor 65.5% of the variance explained Factor scores >.816	Degrees of freedom = 0	.696
PTTJ (perceived threat to one's total job)	v.1.4 v.1.5 v.1.6 v.1.7 v.1.8	1 factor 58% of the variance explained Factor scores >.651	$\chi^2 = 41.5 (5)$ p =.000 CFI=.910 RMSEA=.181	.807
PP (perception of powerlessness)	v.1.9 v.1.10	1 factor 74.2% of the variance explained Factor scores >.861	Degrees of freedom = -1	.651
AC (affective commitment)	v.2.1 v.2.2 v.2.3 v.2.4	1 factor 68.9% of the variance explained Factor scores >.731	$\chi^2 = 0.246 (5)$ p =.884 CFI=1 RMSEA=.000	.842
NC (normative commitment)	v.2.8 v.2.9 v.2.10	1 factor 69.9% of the variance explained Factor scores >.817	Degrees of freedom = 0	.784
IB (innovative behaviour)	v.3.1 v.3.2 v.3.4 v.3.5 v.3.6 v.3.8 v.3.9 v.3.10 v.3.11 v.3.12	1 factor 59.2% of the variance explained Factor scores >.676	$\chi^2 = 168.2 (35)$ p =.000 CFI=.902 RMSEA=.131	.92

According to Nunnally (1967), in the beginning of the investigation, *Cronbach's alpha* values between 0.6 and 0.7 are acceptable for items that should form the same construct. For all the factors, the *Cronbach's alpha* value is always greater than 0.6 (minimum value of 0.651 for PP construct), thus showing that the analysis is adequate. To samples with more than 200 cases, it is very common that *Chi-square* statistic is not reliable, occurring Type I errors (Bagozzi and Yi, 1988; Bentler, 1990; Browne and Cudeck,

1993). In our case, with 224 cases, this statistic may not be the most adequate to qualify the fit of each construct. With the increment of the number of cases, also the discrepancy probability between the implied covariance matrix and the observed one increases (Bagozzi and Yi, 1988). After all these analyses, we proceeded with some corrections, such as:

- v2.4 was eliminated since it is related to two factors at the same time;
- v2.5 was eliminated because it has no relation with any of the factors;
- v2.6, v2.7, v3.7, v3.13 were eliminated due to their low factor scores;
- v3.3 was eliminated since it relates to two factors at same time (cross-saturation).

Eliminating v2.5, v2.6 and v2.7 the “continuance” component was removed, supposing the inexistence of this component in our model. Its removal could be related to its multidimensional nature. According to De Frutos *et al.* (1998) the division of the continuance component into two dimensions (“high cost of leaving the organization” and “perceived alternatives of employment”) is recommended. With these corrections we reached the values mentioned in the table above, thus showing good results for the factors created, in order to the one-dimensionality and reliability issues.

After depurating the sub-scales and contrasting the reliability of the measures, we carried on trying to confirm the existence of validity in the constructs through the convergent and discriminant validity. With a global confirmatory factor analysis we established all the possible causal relations between all the analysed constructs, trying to realize if there is any causal model emerging from the simultaneous relations.

Table 3.3: Global confirmatory factor analysis

<i>MODELS</i>	χ^2 (<i>p</i>)	<i>Degrees of freedom</i>	<i>CFI</i>	<i>RMSEA</i> <i>A</i>	<i>NFI</i>	<i>Respecifications</i>
Confirmatory 1	680.26 (0.000)	316	0.875	0.072	0.791	v.1.3 removed by small SMC ¹⁰ value; z4 fixed in 0.05;
Confirmatory 2	646.9 (0.000)	292	0.876	0.074	0.796	V1.8 removed by small SMC value;
Confirmatory 3	582.6 (0.000)	268	0.886	0.073	0.810	V3.5 y v3.8 removed by crossed saturations;
Confirmatory 4	425.01 (0.000)	223	0.914	0.064	0.836	V1.7 removed by small SMC value;
Confirmatory 5	373 (0.000)	202	0.924	0.062	0.849	-----

In table 3.3 we may observe the global confirmatory factor analysis and the several depurations with respective reespecifications. We may suggest a causal model so as to prove the theoretical model presented.

According to o the model fit evaluation, we elected some indexes like RMSEA (root mean square error of approximation), CFI (comparative fit index), and NFI (normed fit index). The first index provides an absolute fit index in order to indicate the global model fit with respect to the degrees of freedom; the other ones provide an incremental fit index. CFI compares the differences between the model and data matrix, fitted by the degrees of freedom. NFI compares the model with another one that is null and it is not fitted by the degrees of freedom. Recommended values of these indexes are presented in table 3.4:

¹⁰ Squared Multiple Correlation <0,3

Table 3.4: Recommended fit values

<i>Absolute fit index</i>	<i>Recommended fit values</i>
RMSEA	<0.08 acceptable; <0.05 good;
<i>Incremental fit index</i>	<i>Recommended fit values</i>
CFI	>0.9 good; 1 is perfect;
NFI	>0.8 good; 1 is perfect;

Source: Arbuckle, J. (2006).; Luque (2000).

After the several confirmatory analyses, RMSEA value reached 0.062 (<0.08), CFI reached 0.924 (>0.9) and NFI, 0.849 (>0.8). Hence, we may conclude that our model is an acceptable fit.

Table 3.5: Reliability analysis (first level)

<i>Dimensions</i>	<i>Variables</i>	<i>Standardized coefficients</i>	<i>t</i>	<i>α</i>	<i>ρve(n)</i>	<i>ρ</i>
PJF (perceived job feature)	v.1.1	.684	*	.748	.61	.76
	v.1.2	.879	6.726			
PTTJ (perceived threat to one's total job)	v.1.4	.804	*	.830	.63	.84
	v.1.5	.763	10.98			
PP (perception of powerlessness)	v.1.6	.811	11.38	.651	.5	.66
	v.1.9	.631	*			
AC (affective commitment)	v.1.10	.767	5.73	.842	.59	.85
	v.2.1	.620	*			
	v.2.2	.803	9.32			
	v.2.3	.848	9.62			
NC (normative commitment)	v.2.4	.790	9.23	.784	.55	.79
	v.2.8	.674	*			
	v.2.9	.853	8.51			
	v.2.10	.692	8.46			
IB (innovative behaviour)	v.3.1	.600	9.39	.906	.55	.91
	v.3.2	.695	11.24			
	v.3.4	.627	9.88			
	v.3.6	.813	*			
	v.3.9	.822	14.05			
	v.3.10	.735	12.08			
v.3.11	.733	12.04				
	v.3.12	.849	14.70			

Legend: α= Cronbach's alpha, ρve(n)= extracted variance, ρ= composed reliability, *= fixed parameters in 1.

In table 3.5, we present the reliability analysis, verifying the scale reliability. *Cronbach's alphas* account for all the constructs a value higher than 0.6 (minimum $\alpha = 0.651$ for PP) and the extracted variance is higher than (or equal to) 0.5 (only one construct does not reach the 0.5, but it gets very close to that value: 0.43 for INS, second level), as recommended by Hair *et al.* (1999). All the cases reach values around 0.7 for composed reliability (the constructs' composed reliability in mean terms is of 0.71), except for PP construct (however, it assumes a very approximated value: 0.66). In our case, all the dimensions reached higher values than 0.7 (minimum $\rho = 0.76$ for PJF), except for the case of PP, which got a very close value ($\rho = 0.66$).

Concerning the convergent validity, we may conclude that the distinct items used to measure the same construct are significant and strongly correlated with the latent variables. Observing the *t* values and the standardized coefficients of the first level analysis, we can see that all *t* values are higher than 2 and that standardized coefficients are greater than 0.6 (mean of 0.67). At the second level analysis, only 2 parameters are lower than 0.6 (see table 3.6).

Table 3.6: Reliability analysis (second level)

<i>Second level constructs</i>	<i>First level constructs</i>	<i>Standardized coefficients</i>	<i>t</i>	<i>ρve(n)</i>	<i>ρ</i>
INSECURITY	PTTJ	0.54	---	0.43	0.69
	PJF	0.69	4.336		
	PP	0.72	4.279		
LACK OF COMMITMENT	AC	0.94	---	0.5	0.62
	NC	0.32	3.635		

Discriminant validity allows us to verify if two or more measurement instruments are, in fact, measuring really distinct concepts. It is the degree to which scores on a construct do not correlate with scores from other constructs that are not designed to assess the same construct. Adopting the following procedure, we may verify this issue. It is necessary that, for each pair of constructs, the average extracted variance exceeds the correspondent quadratic correlation (Fornell and Larcker, 1981). In our case, all the average extracted variance values are higher than the correspondent quadratic correlation.

Table 3.7: Discriminant validity of the constructs

<i>Correlations</i>	<i>r</i>	<i>ρve1</i>	<i>ρve2</i>	<i>r²</i>
INS – LC	0.66	0.43	0.5	0.43
INS-IB	-0.454	0.43	0.55	0.20
IB- LC	-0.442	0.55	0.5	0.19

Legend: ρ_{ve_i} = extracted variance for construct i; σ = standard deviation; r^2 = quadratic correlation; r = correlation coefficient

Since that all the average extracted variance values respect the recommendation of Fornell and Larcker, (1981), these results indicate that our constructs are measuring a single concept only. However, the pair INS – LC has a correlation (0.43) equal to the

average extracted variance (0.43), indicating that they have a certain proximity. However, with a new factorial analysis with these constructs together, no differences were found compared with the stated previously. Each items charged in its correspondent construct.

Structural model

Different authors elected distinct fit indexes ignoring the *Chi-Square* due to its strong sensitivity to large samples (larger than 200, Bentler, 1990; Browne and Cudeck, 1993).

Table 3.8: Causal models development

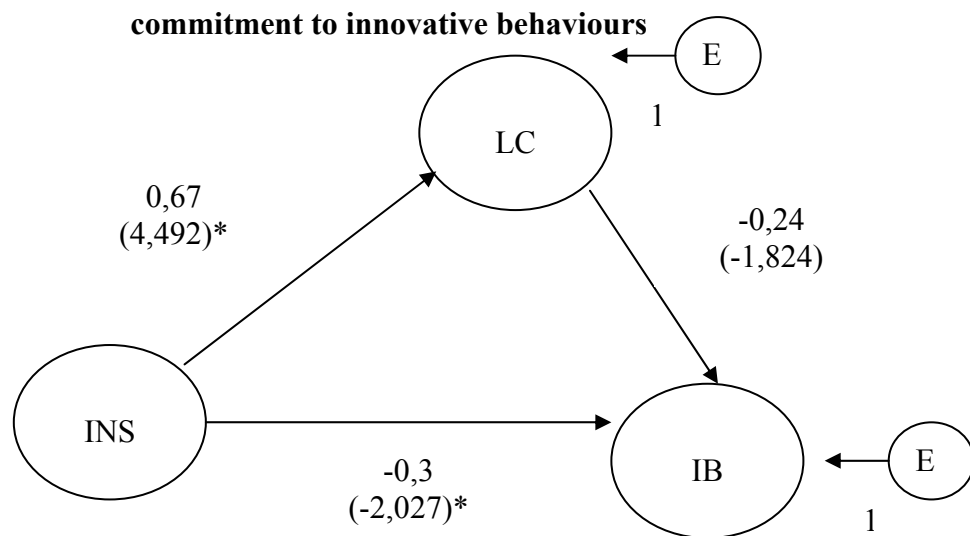
MODELS	χ^2 (p)	Degrees of freedom	CFI	RMSEA	NFI	Respecifications	
						Removed	Added
Model 1	373.00 (.000)	202	0.924	0.062	0.849	---	Correlation of e17 and e21
Model 2	367.54 (.000)	201	0.926	0.061	0.852	---	---

The fit of our first model, “Model 1”, was already acceptable, according to CFI, NFI and RMSEA values (higher than 0.9, 0.8 and lower than 0.08, respectively). With the re-specification, the model fits better the matrix data. The correlation of e17 and e21 was a statistical suggestion by the modification indices¹¹.

The “Model 2” fits strongly the matrix data, with respect to all the fit indexes.

¹¹ They measure something in common, probably “*improvement support*”.

Figure 3.3: Final model - Perceived job insecurity and lack of organizational



* sig. at 0,05 level.

Our final model, “model 2”, shows that job insecurity is manifested essentially by PPP (0,72) and the LC essentially by its AC (0,94) (Appendix 3.3). Respect to the job insecurity, results demonstrate that there is a higher manifestation of job insecurity by the perception of lack of power among workers. Evidence also shows that workers are more emotionally committed with their organizations, than committed due to personal investments or by obligations.

Table 3.9: Standardized effects matrix: direct, indirect and total effects

Effect of/in	INS			LC		
	Direct	Indirect	Total	Direct	Indirect	Total
LC	0.67*	---	0.66*	---	---	---
IB	-0.297*	-0.162	-0.459*	-0.240	---	-0.240

*sig. at 0,05 level

As expected, the impact between INS and LC is positive (0.67), corroborating our H4. This means that when employees feel job insecurity, there is a lower lever of organizational commitment.

At the same time, the impact between INS and IB from workers is significantly negative (-0.297). The H5 is corroborated. Results indicate that when workers perceive job insecurity, their innovative behaviour becomes negatively affected.

The LC shows a negative impact with the IB of workers (-0.240). Although it is not significant, not corroborating the H6.

We conclude that LC does not play any mediating role between INS and IB. A variable or construct may be said to function as a mediator to the extent that it accounts for the relation between the independent and the outcome variable (Baron and Kenny, 1986). The IB is determined, primarily, by INS.

Using the weight scores from the structural model, we computed some latent scores for each construct. To contrast the H1, H2 and H3, we compared the mean from the two groups (DOWNSIZERS *versus* NO DOWNSIZERS). A *t* test was operated to INS, given that it follows a normal distribution. Due to non-normality of LC and IB (see Kolmogorov-Smirnoff test in the table 3.10), we used some non-parametric tests (Z).

Table 3.10: Mean* values by type of firm

	<i>INS</i>	<i>LC</i>	<i>IB</i>
NO DOWNSIZER	0,8165	1,1606	2,4682
DOWNSIZER	0,8471	1,3919	2,3767
<i>K-S test</i>	>0,2	0,000	0,000
Sig. (t, Z)	0,545	0,002	0,038

* Latent scores used to compute "Mean Values"

After comparing the means, we can corroborate the H2 and H3. H1 is not verified. We can say that for the workers in a downsizing context, the perceptions of INS are higher than in no-downsizing context, although, this difference is not statistically significant. The LC level, as expected, is lower in no-downsizing context; and the IB is significantly lower in a downsizing context.

Multi-group Analysis – moderate effect of the company type

We dichotomised the groups (through the company type: with - DOWNSIZER or without downsizing implementation – NO DOWNSIZER) to verify the existence of moderating effects by company type. Generally, “ a moderator is a qualitative (e.g., sex, race, class) or quantitative (e.g., level of reward) variable that affects the direction and/or strength of the relation between an independent or predictor variable and a dependent or criterion variable” (Baron and Kenny, 1986, pp. 1174). Multi-group analysis calculates parameters separately for each group, as well as the fit measures for the considered groups simultaneously.

We applied a multi-group analysis procedure, similar to the moderate effects procedure, according to the company type, trying to analyse if the company that implemented downsizing manifests significant distinct impacts to those which did not implement downsizing.

First, we did not evaluate the interaction effect and we do not impose any restriction. After that, we re-estimated our model imposing equality restrictions between the regression coefficients of the structural model for the different groups. Table 3.11 shows the results of the multi-group analysis.

Table 3.11: Lagrange multiplier test: multi-group analysis

Companies	Standardized coefficients			Fit
	INS → LC	LC → IB	INS → IB	
NO DOWNSIZER	0.807*	0.007	-0.592	$\chi^2 = 649,04(402)$ $p < .000$ CFI=.898 RMSEA=.0053
DOWNSIZER	0.663*	-0.356*	-0.186	
$\Delta\chi^2$	22,18	23.70	23,18.52	
sig	0.178	0.128	0.144	

* sig. at 0,05 level.

The multi-group model shows an acceptable fit, $\chi^2 = 649,04(402)$, $p < .000$, CFI=0.898, RMSEA=0.052.

Results indicate no significant differences between the parameters from DOWNSIZER (IBM) and NO DOWNSIZER firms. There is no moderate effect and no separate models should be analysed. The H7 is not corroborated.

Stability of Parameters

The *bootstrap* procedure consists in re-sampling the original set a specified number of times and thus generating several random-sized sub-samples. The final estimations rely on direct extraction, regardless any distribution assumption (Hair *et al.*, 1999).

We have used 50, 100, 200 and 500 random sub-samples. By comparing the estimated parameters from the original structural model with those from *bootstrap* procedure (using some *t*-tests to compare means), we also do a “weak form” of cross-validation and a evaluation of the solution convergence.

Using the bootstrap maximum likelihood estimation (see Appendix 3.4), the parameters LC<---INS and IB<---INS, showed no significant differences across multiple random samples, meaning that they are stable parameters. We may conclude that our estimated model is robust regardless of the no-normality of data. On the other hand, the parameter IB<---LC revealed no stability (significant differences were accounted among samples), although is was non-significant in our structural model.

3.6 CONCLUSIONS

Our final model fits robustly the data matrix concerning all the fit indexes. Respect to the job insecurity, results demonstrate that there is a higher manifestation of job insecurity by the perception of lack of power among workers. It also is manifested by perceived job feature (0,69) and perceived threat to one’s total job (0,54). Concerning the lack of organizational commitment, employees are more emotionally committed (AC) with their organizations, than committed due to personal investments (NC). They do not feel committed by obligation, since the “continuance” component was removed.

Results corroborate the H2, H3, despite of not corroborating H1. The employees when in a downsizing context, have higher perceptions of INS than in no-downsizing

contexts, although, this difference is not statistically significant. The LC, as expected, is lower in no-downsizing contexts and the IB are significantly lower in a downsizing context.

As expected, INS and LC are related in a positive way, corroborating our H4. This result shows that when workers feel job insecurity, there has a harmful impact on their level of organizational commitment.

At the same time, the impact between job insecurity and innovative behaviour of workers is significantly negative. The H5 is corroborated. Results indicate that when workers perceive job insecurity, their innovative behaviour becomes negatively affected.

However, results do not corroborate the H6: the lack of organizational commitment shows a negative impact with the innovative behaviour of workers, although it is not significant.

An evidence from the H4, H5 and H6 outcomes: the lack of organizational commitment is not a mediating construct between the perceived job insecurity by employees and their innovative behaviour. In fact, the innovative behaviour is determined, primarily, by job insecurity perceived by employees.

Results indicate no significant differences between the parameters from DOWNSIZER firms (IBM) and NO DOWNSIZER firms. Since no moderate effect was found no separate models were analysed.

Differences between the DOWNSIZER and the NO DOWNSIZER can be found when we consider the multi-group analysis. Only the DOWNSIZER firm, IBM, reveals significant coefficients and one possible reason for this concerns the downsizing announcement carried out by IBM during 2005. This company was the only company which experienced a downsizing environment and relevant effects are evidenced in the Portuguese subsidiary. The insecurity experienced by workers led to lack of commitment and decreased innovative behaviour, as described.

The other group of firms, INAMOL, PLASDAN or CSA did not announce downsizing actions. They may be considered as *stable firms* respect to the workforce reduction phenomena. The impacts are only significant when analysed together with the DOWNSIZER firms. An isolated analysis shows no significant impacts.

In short, we account some significant differences between the DOWNSIZER and the NO DOWNSIZER group of firms, concern the mean levels but no for the impacts. Results indicate that there is no significant direct relation between lack of organizational commitment and innovative behaviours of workers, exception made for the DOWNSIZER firms, IBM. However, we may affirm that the insecurity perceived among workers in a downsizing environment positively affects the lack of commitment of workers respect to the organization and negatively the necessary behaviours of employees to the innovation process of firms.

We conclude that job insecurity, caused by downsizing, leads simultaneously to a lack of organizational commitment, owing to the loss of workers who integrated the work

teams and, as a consequence, the informal network relations disappear. Since the innovation process implies an active attitude from the workers so as to drive their abilities and knowledge to the exploration and implementation of ideas, this job insecurity perceived by workers can affect the worker's innovative behaviour. Results indicate that the innovative behaviour is not mediated by the lack of organizational commitment felt by workers, hence, it is totally determined, by job insecurity experienced by workers.

3.7 FUTURE RESEARCH AND LIMITATIONS

This study is limited given that a single case of downsizing was elected with three more cases of no downsizing firms. This study is past-related which provided a retrospective view of the changes felt by workers. In this sense, the findings are not generalizable across countries or industries. A longitudinal study would be preferred to establish a comparison of the same company in different moments of time with respect to the effects studied in here, in order to have longitudinal insights.

3.8 MANAGEMENT IMPLICATIONS

When managers need to make a decision on lay-off, they must be aware of the several negative effects on survivors who remain in the firm.

Workers perceive insecurity respect to their professional circumstance, and when employees feel job insecurity, there is a lower lever of organizational commitment, owing to the loss of workers who formed part of work teams and, consequently, the

informal network relations disappear. At the same time, insecurity has a negative impact on the innovative behaviour of workers, thus indicating that when employees feel job insecurity, this affects their motivation level negatively, and since the innovation process implies a proactive conduct so that workers can drive their abilities and knowledge to the exploration and implementation of ideas, this insecurity respect to their employment situation can finally affect the worker's innovative behaviour.

Managers must act in order to improve the security felt by workers with respect to the firm, in order to attenuate the negative impact on innovative behaviours, especially when the firm is acting in an innovative sector.

In short, managers must be careful when they decide to announce a lay-off or to implement it, because it will tremendously affect survivors. Indirectly through them, other consequences could appear, for example in the financial performance.

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GENERAL CONCLUSION

Downsizing has been a major organizational trend in the last two decades. Managers adopted downsizing as a manageable tool to improve profitability, mainly by reducing the workforce size through lay-off.

Several countries and activity sectors chose to adopt this practice and had to face its consequences. In every single case, the main purpose of these practices is only one: to reach better performance levels. However, if downsizing actually improves the firm's performance or not, has been a central question in the downsizing literature, and it still is. The existent empirical evidence shows that profitability does not necessarily follow the downsizing practices. Nor even the stock market reaction is always and generally positive for downsizing announcements. Thus, managers must be careful when they decide to reduce their workforce size, always bearing in mind the improvement of profitability.

This study assumes the form of three connected research papers on the downsizing effects within the Portuguese context.

We began our study with a state of art description. A literature revision, in qualitative and quantitative terms, is made. Regardless of the qualitative part, our first chapter also includes a meta-analysis with the purpose of synthesizing the organizational effects of downsizing on profitability, those studies that mainly adopt the mean differences' methodology, adequate for the meta-analysis technique. The application of the meta-

analysis in this study intends to be a complement to the qualitative revision of literature done. The effect size estimated by the integration of the eight possible studies in the downsizing effects on profitability research field is positive, even though it is extremely small. Also in the sub-group analysis, the higher result is obtained by the group of studies that give us the exact p-value. However, the size is still small and we should interpret it as an inappreciable effect. It is a very small effect size which avoid us to conclude that the plant reductions unquestionably increase the company's profitability.

Concerning the second chapter, as regards organizational effects, we worked based ourselves on a sample of Portuguese companies with at least 50 employees, a total of 2994 companies. There are 737 companies which downsized their workforce in 5%, or more, in at least one of the 13-year periods. We may conclude that our profitability variables, ROA and PM, differ in a significantly negative way and with a pattern in the year before the downsizing occurs and in the t year, the year of the downsizing occurrence. Results indicate that profitability measures in the year before the downsizing are lower in the case of DOWNSIZERS when compared with the NO DOWNSIZERS, what confirms the idea that those firms that downsized their workforce had had previous worse results. As a reaction to those unfavourable results they decide to downsize in an attempt to increase their results.

In the two years that followed the downsizing, it becomes clear that there are not patterned significant differences on profitability from the companies that downsized and those that did not.

As to the longitudinal effects for DOWNSIZER firms, the results do not allow us to confirm that firms increased their results in the succeeding years after downsizing, due to the fact that there were no significant differences. We may say that PM has some short term positive effect but it is not sustainable and, in the second year after (t+2), the difference between groups is not significant.

The essence of this study is that it has a pioneering nature concerning the Portuguese reality of downsizing effects on profitability. The economic perspective, the primary and central explanation for downsizing, is not totally accomplishing the bottom-line objectives. The financial distress before downsizing led companies to downsize. Our results may prove this fact. However, with those results, after the lay-off, the Portuguese firms that implemented it did not completely reach the main goal of improving profitability measures.

Despite of the organizational effects, other group of effects - the individual ones - must be studied and managers must be aware of them. Increased job insecurity or lower commitment, are some of the multiple effects of these practices on the survivors who remain in the company. The innovative behaviour of workers is also negatively affected by such a strategy that eliminates several informal networks.

In our third chapter, some empirical evidence highlighted that, when facing a downsizing environment, employees have higher perceptions of job insecurity than in no-downsizing contexts. Although this difference is not statistically significant. With respect to no-downsizing contexts, the lack of commitment and the innovative behaviour are significantly lower than in downsizing circumstances.

Results also demonstrate that there is a higher manifestation of job insecurity by the perception of lack of power among workers. Concerning the lack of organizational commitment, employees are more emotionally committed to their organizations. The affective component surpasses the normative or continuance ones in what concerns the lack of commitment. Thus, it shows that their commitment through personal investments or the feeling of obligations is exceeded by the emotional issues.

Results also prove that job insecurity has got a positive impact on lack of commitment. When workers perceive insecurity, as to their professional situation, there is a lower level of commitment with respect to the organization. Also, job insecurity has a negative impact concerning the innovative behaviour of workers, indicating that when employees perceive job insecurity, this negatively affects their motivation level, as well as the capability and knowledge needed for the innovation process to be successful and so that what is known as innovative behaviour is reached. We also proved that the lack of organizational commitment shows a negative impact on the innovative behaviour of workers, although it is not significant. Therefore, the lack of commitment is not a mediating construct between job insecurity and innovative behaviour. The job insecurity perceived by workers determines their innovative behaviour. Managers must avoid their employees to feel insecure with respect to their job, if they intend to maintain a good level of innovative behaviour.

Concerning the multi-group analysis done, the relations we propose in our study are only significant in the case where there was an announcement of downsizing. Other

firms, without the downsizing environment and considered as NO DOWNSIZERS, did not reveal the same results that IBM did.

In fact, the significant differences encountered were at the mean levels of job insecurity, lack of commitment and innovative behaviours between DOWNSIZER and NO DOWNSIZER firms. Results do not indicate differences concerning the impacts of the relations between the constructs. This result indicates that there was not a moderate effect and that no separate models should be analysed.

The scientific literature review indicates that downsizing practices, especially if focused on their consequences and effects, do not have a consensual insight. An isolated action of laying-off can not be proclaimed as the saviour practice for financial distress. Conceivably, firms should make a more efficient use of their employees, so as to generate higher financial indicators, and start cutting down on other resources instead of the human one.

Readers must understand that a lot remain untold about the subject of downsizing effects on the Portuguese reality. However, this study represents a first step, and Portuguese managers should be aware of it. Most of all, managers must become conscious of the downsizing effects on profitability, after the lay-off, as well as on survivors.

GENERAL FUTURE RESEARCH

As an initial study on the downsizing effects, regarding the Portuguese case, much remain to explore about the Portuguese context of downsizing practices, especially as to its effects. Studies to come should analyse the moderating factors between the downsizing- performance relations. In addition, future research should use a greater sample to the generalization of the obtained results and replicate in other contexts. More firms with downsizing announcements should be included so that its effect on the innovative behaviour may be analysed.

APPENDICES

Appendix 2. 1 - List of companies used in Chapter II (1357 companies)

RECHEIO-CASH AND CARRY, S.A.
CLEMENTE & SILVA, LDA.
COMPANHIA PORTUGUESA DE HIPERMERCADOS, S.A.
UNICER - DISTRIBUIÇÃO DE BEBIDAS, S.A.
EDIFER-CONSTRUÇÕES PIRES COELHO & FERNANDES, S.A.
MARTIFER - S.G.P.S. S.A.
SOPOL-SOCIEDADE GERAL DE CONSTRUÇÕES E OBRAS PUBLICAS, S.A.
GERTAL-COMPANHIA GERAL DE RESTAURANTES E ALIMENTAÇÃO,S.A.
SGAL-SOCIEDADE GESTORA DA ALTA DE LISBOA, S.A.
FDO-INVESTIMENTOS E PARTICIPAÇÕES, SGPS, S.A.
CONSTRUÇÕES GABRIEL A.S. COUTO, S.A.
SOGENAVE-SOC.GERAL ABASTECIMENTOS A NAVEGAÇÃO E IND. HOTELEIRA, S.A.
INVESTVAR COMERCIAL, SGPS S.A.
HOSPITAL DE SANTA MARTA, E.P.E
UNICERGESTE-GESTAO DE SERVIÇOS DE DISTRIBUIÇÃO, S.A.
CENTRO HOSPITALAR DO ALTO MINHO, SA
TECNASOL-FGE-FUNDAÇÕES E GEOTECNIA, S.A.
HOSPITAL DA SENHORA DA OLIVEIRA - GUIMARAES, E. P. E
CARPAN-COOP.ABASTECED. RETALHISTAS DE PROD.ALIMENTARES DO NORTE, C.R.L
RICON INDUSTRIAL-PRODUÇÃO DE VESTUARIO S.A.
MUNICIPIO DE PORTIMAO
UNICER AGUAS, S.A.
JOAO SALVADOR, LDA.
UNICER - SUMOS E REFRIGERANTES, S.A.
BARBOT-INDUSTRIA DE TINTAS, S.A.
UNICER - SERVIÇOS DE GESTAO EMPRESARIAL S.A.
GENERIS - FARMACEUTICA, S.A.
NG - NEGOCIOS E GESTAO, SGPS, S.A.
J. & J. TEIXEIRA, S.A.
COSTA & CARVALHO, S.A.
TRIPERU-SOCIEDADE DE PRODUÇÃO E COMERCIALIZAÇÃO DE AVES, S.A.
ESCOLAS CAMBRIDGE, LDA.
GRANBEIRA - SOCIEDADE EXPLORAÇÃO E COMÉRCIO DE GRANITOS, S.A.
ALBINO DIAS DE ANDRADE, LDA.
CORS-COMP.EXPLOR.ESTAÇÕES, SERVIÇO E RETALHO DE SERVIÇOS AUTOMOVEL,LDA
SOLADRILHO-SOCIEDADE CERAMICA DE LADRILHOS, S.A.
SODEPO-EMPRESA DE TRABALHO TEMPORARIO, S.A.
LIPPERT-UNIPOL (P)-TRATAMENTO DE SUPERFICIES, LDA.
IRMAOS SALGADO & CIA., LDA.

STORIA DEL CAFFE 2-CAFE E CAFETARIAS, LDA.
GRUPO MEDIA CAPITAL, SGPS, S.A.
METALOCAR - INDUSTRIA DE METALOMECANICA, S.A.
H.SEABRA-COMÉRCIO E INDUSTRIAS TÉRMICAS, S.A.
SOCIEDADE DOS VINHOS BORGES, S.A.
SECIL - BRITAS, S.A.
PEREIRA, BARROSO & OLIVEIRA, LDA.
ALEAL - INDUSTRIA DE MOBILIARIO, LDA.
OPTIMUS-TELECOMUNICAÇÕES, S.A.
NESTLÉ PORTUGAL, S.A.
BA GLASS I-SERVIÇOS DE GESTAO E INVESTIMENTOS, S.A.
LENA-ENGENHARIA E CONSTRUÇÕES, S.A.
RADIO POPULAR - ELECTRODOMÉSTICOS, S.A.
SPDH-SERVIÇOS PORTUGUESES DE HANDLING, S.A.
UNIDADE LOCAL DE SAUDE DE MATOSINHOS, E.P.E
AVIPRONTO - PRODUTOS ALIMENTARES, S.A.
HOSPITAL DE SANTO ANDRÉ, E.P.E
JMA - FELPOS, S.A.
HOSPITAL DE SANTA CRUZ, S.A.
ADECCO-RECURSOS HUMANOS-EMPRESA DE TRABALHO TEMPORARIO,LDA
GLOBE MOTORS PORTUGAL-MATERIAL ELECTRICO PARA INDUSTRIA AUTOMOVEL, LDA
MACMODA - COMÉRCIO DE VESTUARIO, S.A.
ACE - SISTEMAS COMERCIAIS INFORMATICOS S.A.
VMPS - AGUAS E TURISMO, S.A.
MARONAGRES-COMÉRCIO E INDUSTRIA DE CERAMICA, S.A.
ND (PORTUGAL) TRANSPORTES, LDA.
JMA - FIAÇÃO, S.A.
AGUAS DO ZEZERE E COA S.A.
CARPAN-SUPERMERCADOS,SOCIEDADE UNIPessoal, LDA.
ANTEROS - EMPREITADAS, SOCIEDADE DE CONSTRUÇÕES E OBRAS PUBLICAS, S.A.
ADP-AGUAS DE PORTUGAL SERVIÇOS AMBIENTAIS, S.A.
ALVARO GIL & FILHA, S.A.
WS ATKINS (PORTUGAL)-CONSULTORES E PROJECTISTAS INTERNACIONAIS, LDA.
RESIOESTE-VALORIZAÇÃO E TRATAMENTO DE RESIDUOS SOLIDOS, S.A.
INESC PORTO-INSTITUTO ENGENHARIA DE SISTEMAS E COMPUTADORES DO PORTO
BOM CALÇADO, LDA.
MAGRATEX-MARMORES E GRANITOS PARA EXPORTAÇÃO, LDA.
INTERHOTEL-SOCIEDADE INTERNACIONAL DE HOTÉIS, S.A.
FRUTUS-ESTAÇÃO FRUTEIRA DE MONTEJUNTO, CRL
JUPITER-INDUSTRIA HOTELEIRA, S.A.
PARQUE BIOLOGICO DE GAIA, E.M.

MOTA & ALMEIDA, LDA.
JAPAUTOMOTIVE-COMÉRCIO DE AUTOMOVEIS, UNIPessoal, LDA.
HOSPITAL DE SAO SEBASTIAO, E.P.E.
GALP ENERGIA, SGPS, S.A.
JOSE DE MELLO SAUDE, SGPS, S.A.
CIBAL-DISTRIBUIÇÃO DE BEBIDAS E ALIMENTAÇÃO, S.A.
UNIBETAO-INDUSTRIAS DE BETAO PREPARADO, S.A.
SOLIDAL-CONDUTORES ELÉCTRICOS, S.A.
ITAU-INSTITUTO TECNICO DE ALIMENTAÇÃO HUMANA, S.A.
INSTITUTO PORTUGUES DE ONCOLOGIA FRANCISCO GENTIL, E.P.E.
APS-ADMINISTRAÇÃO DO PORTO DE SINES, S.A.
SIMTEJO -SANEAMENTO INTEGRADO DOS MUNICIPIOS DO TEJO E TRANCAO S.A.
HOSPITAL SANTA MARIA MAIOR E.P.E
AEROSHoes-DISTRIBUIDORES DE CALÇADO, S.A.
HOSPITAL SAO GONÇALO, E.P.E.
PROGELCONE-COMÉRCIO E INDUSTRIA, S.A
SGS DE PORTUGAL-SOCIEDADE GERAL DE SUPERINTENDENCIA, S.A
STRONG-SEGURANÇA, S.A.
DIMOLDURA-MOLDURAS E COMPONENTES, LDA.
DROPER-DROGARIA E PERFUMARIAS, LDA
FRISSUL-ENTREPOSTOS FRIGORIFICOS, S.A.
LPM-COMERCIO AUTOMOVEL, S.A.
J. PEREIRA DA CRUZ, S.A
MERCEDES BENZ PORTUGAL COMERCIO DE AUTOMOVEIS, S.A.
SAPEC, S.A.
RAR - SOCIEDADE DE CONTROLE (HOLDING), S.A.
TRIVALOR-SOCIEDADE GESTORA DE PARTICIPAÇÕES SOCIAIS, S.A.
SANER-SOCIEDADE ALIMENTAR DO NORTE, S.A.
JERONIMO MARTINS-DISTRIBUIÇÃO DE PRODUTOS DE CONSUMO, LDA.
PULL & BEAR (PORTUGAL)-CONFECÇÕES, LDA.
MESTRE MACO-MATERIAIS DE CONSTRUÇÃO, S.A.
CAETANOBUS-FABRICAÇÃO CARROÇARIAS, S.A.
HPP - HOSPITAIS PRIVADOS DE PORTUGAL, SGPS S.A.
ENERSIS-SOCIEDADE GESTORA DE PARTICIPAÇÕES SOCIAIS, SA.
AREA INFINITAS-DESIGN DE INTERIORES, S.A.
MOTIVO-COMERCIO E MOTIVAÇÃO DE MERCADOS, S.A.
EFACEC DT-TRANSFORMADORES DE DISTRIBUIÇÃO DE ENERGIA, S.A.
BELTRAO COELHO, S.A.
NOVABASE ADVANCED CUSTOM DEVELOPMENT-S.INFOR.DES.MED.AUT.PROCESSOS,S.A
CPTP-COMP.PORTUGUESA DE TRABALHOS PORTUARIOS E CONSTRUÇÕES, S.A.
SOMITEL II - EQUIPAMENTOS DE TELECOMUNICAÇÕES, SA.
UNIVEG PORTUGAL-IMPORTAÇÃO EXPORT., TRANSF.DIST.PROD. ALIMENTARES, S.A
JADO IBERIA-PRODUTOS METALURGICOS, S.A.
HARKER SUMNER, S.A.
MATRIZ - SOCIEDADE DE CONSTRUÇÕES, LDA.
COMPANHIA DOS BANHOS DE VIZELA, S.A.
SOCI 4-CONFECÇÕES DE TEXTTEIS, LDA.
NOVA TEXTIL ARAUJO & GONÇALVES, S.A
REALCE - EMPRESA DE CONFECÇÕES, S.A.
GRUPO PESTANA. S.G.P.S., S.A.
EFACEC-SISTEMAS DE ELECTRONICA, S.A.

JMV-JOSE MARIA VIEIRA, S.A.
E.I.P.-ELECTRICIDADE INDUSTRIAL PORTUGUESA, S.A
CARMIM-COOPERATIVA AGRICOLA DE REGUENGOS DE MONSARAZ, CRL.
RECER - INDUSTRIA DE REVESTIMENTOS CERAMICOS, S.A.
PROMORAIL-TECNOLOGIAS DE CAMINHOS DE FERRO, S.A.
JOSÉ JULIO JORDAO, LDA.
AENOR-AUTO ESTRADAS DO NORTE, S.A.
SOCIEDADE J. NEVES, LDA.
COOPERATIVA DE PRODUÇÃO E CONSUMO PROLETARIO ALENTEJANO, CRL.
GEMADOURO - PRODUTORES DE OVOS, S.A.
MESP-MOTA-ENGIL,SERVIÇOS PARTILHADOS,ADMINISTRATIVOS E DE GESTAO, S.A.
JOAO GOMES CAMACHO, S.A.
CONSTRUTORA DO LENA, SGPS, S.A.
PT - SISTEMAS DE INFORMAÇÃO, S.A.
LIDO SOL II - DISTRIBUIÇÃO DE PRODUTOS ALIMENTARES, S.A.
ICP-AUTORIDADE NACIONAL DE COMUNICAÇÕES (ICP-ANACOM)
IBERLIM-SOCIEDADE TÉCNICA DE LIMPEZAS, S.A.
AGERE-EMPRESA DE AGUAS EFLUENTES E RESIDUOS DE BRAGA, E. M.
BRASOPI - COMÉRCIO DE VESTUARIO, S.A.
GUEDOL-ENGENHARIA, S.A.
MATADOURO REGIONAL DO ALTO ALENTEJO, S.A.
JOAQUIM MOREIRA VENDA & CIA, LDA.
FAURECIA-ASSENTOS DE AUTOMOVEL, LDA.
MANUEL RUI AZINHAIAS NABEIRO, LDA.
CACETINHO-COMERCIO RETALHISTA E EXPLORAÇÃO DE CENTROS COMERCIAIS, S.A.
C.SANTOS-VEICULOS E PEÇAS, S.A.
AGUAS DO DOURO E PAIVA, S.A.
SASAL-ASSENTOS PARA AUTOMOVEIS, S.A.
EDA-ESTOFAGEM DE ASSENTOS.UNIPessoal, LDA
SITEL-SOCIEDADE INSTALADORA DE TUBAGENS E EQUIPAMENTOS, LDA.
CURTUMES IBERIA, S.A.
CEREV - CERAMICA DE REVESTIMENTO, S.A
PANGITER-COSMETICO-FARMACEUTICA, LDA.
L. LEPORI, LDA.
ELECTRO PORTUGAL, LDA.
EMARP-EMPRESA MUNICIPAL DE AGUAS E RESIDUOS DE PORTIMAO, E.M.
EPEDAL-INDUSTRIA DE COMPONENTES METALICOS, S.A.
TORRE - SOCIEDADE DE CONFECÇÕES, S.A
EDSCHA-ARJAL, SISTEMAS TECNICOS PARA AUTOMOVEIS, LDA.
REPSOL PORTUGUESA, S.A
NORTENHAZORES - INDUSTRIA E COMÉRCIO DE MATERIAIS DE CONSTRUÇÃO, S.A.
JPC-ELASTICOS, S.A.
FABRICA DE CALÇADO MELITOS, LDA.
ANAM-AEROPORTOS E NAVEGAÇÃO AÉREA DA MADEIRA, S.A.
INTEVIAL-GESTAO INTEGRAL RODOVIARIA, S.A.
FABRICA DE TINTAS 2000, S.A.
HILTI (PORTUGAL) - PRODUTOS E SERVIÇOS, LDA.
BP PORTUGAL - COMÉRCIO DE COMBUSTIVEIS E LUBRIFICANTES S.A.
FEIRA NOVA-HIPERMERCADOS, S.A.
ADP - AGUAS DE PORTUGAL, SGPS S.A.
GESTIRETALHO-GESTAO E CONSULTORIA PARA A DISTRIBUIÇÃO A RETALHO, S.A.

NOVABASE-SOCIEDADE GESTORA DE PARTICIPAÇÕES SOCIAIS, S.A.
J.S.C-SOCIEDADE GESTORA DE PARTICIPAÇÕES SOCIAIS, S.A.
DALKIA SGPS, S.A.
CTT - CORREIOS DE PORTUGAL, S.A. (CTT)
CARCLASSE-COMÉRCIO DE AUTOMOVEIS, S.A.
INDASA - INDUSTRIA DE ABRASIVOS, S.A.
CHARON-PRESTAÇÃO DE SERVIÇOS DE SEGURANÇA E VIGILANCIA, S.A.
PAVICENTRO-PRÉ-FABRICAÇÃO, S.A.
FILKEMP-INDUSTRIA DE FILAMENTOS,S.A.
PRESDOURO-PRE-ESFORÇADOS BEIRA DOURO, S.A.
ASSICOMATE-MATERIAIS DE CONSTRUÇÃO, S.A.
S.V.A.-SERVIÇOS DE VIGILANCIA E ALARMES, S.A.
OLIVACAST-FUNDAÇÃO FERROSA,S.A.
JOAO FERNANDES DA SILVA, S.A.
CONFECÇÕES CRS, LDA.
PORTUGAL TELECOM, INOVAÇÃO, S.A.
POLIMAIA-PERFUMARIA E COSMETICA, LDA
FDO-CONSTRUÇÕES, S.A.
COFACO ACORES, INDUSTRIA CONSERVAS, S.A.
CONSTRUÇÕES AQUINO & RODRIGUES, S.A.
SUBERCENTRO - CORTIÇAS, LDA.
PREBEL-SOCIEDADE TÉCNICA DE PRE-FABRICAÇÃO E CONSTRUÇÃO, S.A.
SUBERCOR - CORTIÇAS DE PORTUGAL, LDA.
J. REGO & CIA., LDA.
REN - REDE ELÉCTRICA NACIONAL, S.A. (REN)
FUTEBOL CLUBE DO PORTO-FUTEBOL,SAD
UNICER-BEBIDAS DE PORTUGAL SGPS, S.A
CONDURIL - CONSTRUTORA DURIENSE, S.A. (CONDURIL)
PRIMEDRINKS-COMERCIALIZAÇÃO BEBIDAS ALCOOLICAS PRODUT.ALIMENTARES,S.A
BARATA GARCIA, S.A
TNT EXPRESS WORLDWIDE(PORTUGAL), TRANS.TRANP.SERV.COMPLEMENTARES,S.A
ESSO PORTUGUESA, LDA.
AMORIM & IRMAOS, S.A.
ASTRAZENECA - PRODUTOS FARMACEUTICOS, LDA.
PROSEGUR-COMPANHIA DE SEGURANÇA, LDA.
FABRICA TEXTIL RIOPELE, S.A.
RUI COSTA E SOUSA & IRMAO, S.A
FERRO-INDUSTRIAS QUIMICAS (PORTUGAL), LDA
SOTANCRO-EMBALAGEM DE VIDRO, S.A.
CAVES ALIANÇA, S.A.
PORCELANAS DA COSTA VERDE, S.A.
PAVILIS - PRÉ-FABRICAÇÃO, S.A.
PROCESL-ENGENHARIA HIDRAULICA E AMBIENTAL, LDA.
BAPTISTA, IRMAOS & CIA., LDA.
HOTEIS PLASA, S.A.
SOCITREL - SOCIEDADE INDUSTRIAL DE TREFILARIA, S.A.
FERREIRA-CONSTRUÇÕES, S.A.
PANIKE - INDUSTRIA DE PRODUTOS ALIMENTARES CONGELADOS, S.A.
COMPAL - COMPANHIA PRODUTORA DE CONSERVAS ALIMENTARES, S.A. (COMPAL)
GUEDES & BORREGO, LDA.
EDIFER-INVESTIMENTOS, SOCIEDADE GESTORA DE PARTICIPAÇÕES SOCIAIS,S.A.

DAI-SOCIEDADE DE DESENVOLVIMENTO AGRO-INDUSTRIAL, S.A.
AIR LIQUIDE MEDICINAL,S.A.
LUSOTUR GOLFES-SOCIEDADE DE CONSTRUÇÃO E GESTAO DE GOLFES, S.A.
HOTEIS TIVOLI, S.A.
HORARIOS DO FUNCHAL-TRANSPORTES PUBLICOS, S.A.
SOCIEDADE COMERCIAL C. SANTOS, LDA.
ANA - AEROPORTOS DE PORTUGAL, S.A. (ANA)
ELECTRICIDADE DOS AÇORES, S.A.
CUSTODIO DOS SANTOS GUERRA - EMPREITEIROS, S.A.
ERICSSON TELECOMUNICAÇÕES, LDA.
EMPORDEF-EMPRESA PORTUGUESA DE DEFESA (SGPS), S.A.
SALVOR-SOCIEDADE DE INVESTIMENTOS HOTELEIROS, S.A.
SOJORNAL-SOCIEDADE JORNALISTICA E EDITORIAL, S.A.
SCHENKER - TRANSITARIOS, LDA.
PLURICOOP-COOPERATIVA DE CONSUMO, CRL.
DURA AUTOMOTIVE PORTUGUESA-INDUSTRIA COMPONENTES PARA AUTOMOVEIS, LDA.
VEDIOR PSICOFARMA- DESENVOLVIMENTO HUMANO EMPRESARIAL, LDA
TEXTO EDITORES, LDA
MATOS & PRATA - VEICULOS, MAQUINAS E PEÇAS, S.A.
COBA-CONSULTORES PARA OBRAS,BARRAGENS E PLANEAMENTO,S.A.
INDUTORA-INSTALADORA ELÉCTRICA MADEIRENSE, S.A.
NORDIGAL-INDUSTRIA DE TRANSFORMAÇÃO ALIMENTAR, S.A.
INCOMPOL-INDUSTRIA DE COMPONENTES, S.A.
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LEONEL P. CUNHA HERDEIROS, LDA
SCANEVA-PRODUTOS ALIMENTARES, S.A.
GUIALMI-EMPRESA DE MOVEIS METALICOS, S.A.
INDELAGUE-INDUSTRIA ELECTRICA DE AGUEDA, S.A.
ELMANO MENDES, LDA.
EYSSA TESIS-TECNOLOGIA DE SISTEMAS ELECTRONICOS, S.A.
MACHADO, CARNEIRO & LOBOS, LDA.
CASO-CENTRO DE ABATE DE SUINOS DO OESTE, LDA.
JORJAUTO (CENTRO)-SOCIEDADE DE COMERCIO RODOVIARIO, LDA.
ARGIBETAO-SOCIEDADE DE NOVOS PRODUTOS DE ARGILA E BETAO, S.A.
ESTEREOFOTO - GEOENGENHARIA, S.A.
TOLDICONFEX-MATERIAL PUBLICITARIO, LDA.
PORTUGALIA-REFEIÇÕES RAPIDAS, LDA
FABRICA DE CALÇADO DA MATA, LDA.
MANUEL TEIXEIRA, LDA.
JORGEN MORTENSEN, LDA.
CUF TEXTEIS, S.A.
CESAE-CENTRO DE SERVIÇOS E APOIO AS EMPRESAS
PIERRE FABRE MEDICAMENT PORTUGAL, LDA.
ENTREPOSTO COMERCIAL-VEICULOS E MAQUINAS, S.A.
EPAL - EMPRESA PORTUGUESA DAS AGUAS LIVRES, S.A. (EPAL)
MOVIFLOR 6-COMERCIO DE MOBILIARIO, S.A.
ENDUTEX-REVESTIMENTOS TEXTEIS, S.A.
MESQUITA-MADEIRAS, S.A.
CMP-CIMENTOS MACEIRA E PATAIAS, S.A (CMP)
TECIALGO-SOCIEDADE DE ACABAMENTOS E MANUFACTURAS TEXTEIS,S.A.
RODOGESTE-GESTAO DE POSTOS RODOVIARIOS, LDA.

GONVARRI-PRODUTOS SIDERURGICOS, S.A
SOCIEDADE PORTUGUESA DO AR LIQUIDO (ARLIQUIDO), LDA
FABRICA DE CERAMICA DE VALADARES, S.A.
TECNIDATA SI - SERVIÇOS E EQUIPAMENTOS DE INFORMATICA, S.A.
GOUVEIA & CAMPOS, S.A.
VSL - SISTEMAS PORTUGAL, S.A.
COOPROFAR - COOPERATIVA DOS PROPRIETARIOS DE FARMACIA, C.R.L. (COOPROFAR)
ZAGOPE - CONSTRUÇÕES E ENGENHARIA, S.A
ANTONIO DE ALMEIDA & FILHOS - TEXTEIS, S.A.
ESTAMPARIA TEXTIL - ADALBERTO PINTO DA SILVA, S.A COMPANHIA DE HOTELARIA E CONSUMO HISPANOLUSA, SOC. UNIPessoal, LDA
GEOSOC-GEOTECNIA E FUNDAÇÕES, S.A.
LUSOFANE, S.A.
SAG.GEST-SOLUÇÕES AUTOMOVEL GLOBAIS, S.G.P.S, S.A.
METROPOLITANO DE LISBOA, EP.
CELULOSE DO CAIMA, SGPS, S.A.
ESTALEIROS NAVAIS DE VIANA DO CASTELO, S.A. FICO CABLES-FABRICA DE ACESSORIOS E EQUIPAMENTOS INDUSTRIAIS, LDA.
PIERRE FABRE Dermo-COSMETIQUE PORTUGAL, LDA.
LUSILECTRA-VEICULOS E EQUIPAMENTOS, S.A
BRITALAR - SOCIEDADE DE CONSTRUÇÕES, S.A. FERPINTA-INDUSTRIAS DE TUBOS DE AÇO DE FERNANDO PINHO TEIXEIRA,S.A. (FERPINTA)
SODIM, SGPS, S.A.
EMILIO DE AZEVEDO CAMPOS, S.A.
WORTEN-EQUIPAMENTOS PARA O LAR, S.A. OFCEP-OFFICE CENTRE PORTUGAL-EQUIPAMENTO DE ESCRITORIO, LDA.
PRESSELIVRE - IMPRENSA LIVRE, S.A.
MODALFA-COMERCIO E SERVIÇOS, S.A.
CONSTANTINO FERNANDES OLIVEIRA & FILHOS, S.A.
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MANITOWOC CRANE GROUP PORTUGAL, LDA.
SARDINHA & LEITE, S.A.
AVENIR TELECOM SGPS, S.A.
NAVARRA - EXTRUSAO DE ALUMINIO, S.A
MARSIPEL-INDUSTRIA DE CURTUMES, S.A.
UNIFATO-CONFECÇÕES DO CENTRO, LDA SUPER DESCONTO-SOCIEDADE PORTUGUESA DE LOJAS DE DESCONTO, S.A.
EFACEC - AUTOMAÇÃO E ROBOTICA, S.A.
MARQUES BRITAS, S.A.
TRECEM- TREFILARIA DO CENTRO, S.A.
CAIADO, S.A.
INVEPE-INDUSTRIA DE VEICULOS PESADOS, S.A.
PAGAPOUCO-ESTABELECIMENTOS COMERCIAIS, S.A.
A CIMENTEIRA DO LOURO, LDA.
MAFICAL-MANUFATURA INDUSTRIAL DE CALÇADO, S.A.
COFISA - CONSERVAS DE PEIXE DA FIGUEIRA, S.A.
LUIS SANTOS & MONTEIRO, S.A.
JOSÉ FRANÇA-CONSTRUÇÕES S.A. EMEL-EMPRESA PUBLICA MUNICIPAL DE ESTACIONAMENTO DE LISBOA E.P.M.

MBB TEIXEIRA, S.A.
CARMO, S.A
PIUBELLE -CONFECÇÕES, INDUSTRIA E COMÉRCIO, LDA.
BAQUELITE LIZ, S.A
A FOLHA CULTURAL, C.R.L.
IBEROPERFIL - PERFIS POSTFORMADOS, SA
OLIVEIRA & SILVA-CONFECÇÕES,LDA.
R. D. CONTREIRAS, S.A.
FIRMAGO-FUNDAÇÃO DE ALUMINIOS, S.A.
SANDOMETAL-METALOMECANICA E AR CONDICIONADO, S.A.
JOSÉ MANUEL PIMENTA DA SILVA & CIA., LDA.
A. BRITO - MOBILIARIO, S.A.
VIVEIROS DO FALCAO-EMPRESA DE AGRICULTURA E JARDINAGEM,S.A.
MARIO PIRES & FIUZA, LDA.
MELIX - INDUSTRIA DE MOBILIARIO, S.A
SUPERMERCADOS SELECÇÃO, S.A.
SOCIEDADE AGRICOLA VIVEIROS DO FORAL, LDA.
MASTO-TEXTEIS, LDA. SOCIEDADE CONST.CIVIL OBRAS PUBL. ANTONIO RODRIGUES PARENTE, S.A.
AVIFROTA-TRANSPORTE DE MERCADORIAS, LDA.
RICEL-INDUSTRIAS DE PRE-FABRICADOS DE BETAO E CERAMICA, LDA.
MALHACILA - FABRICA DE MALHAS, S.A.
LUZ & VALE FROES, S.A.
SANTIX - INDUSTRIA DE CONFECÇÕES, S.A. QUIMITÉCNICA-SERVIÇOS COMÉRCIO E INDUSTRIA DE PRODUTOS QUIMICOS,S.A.
HUSA-HOTÉIS UNIDOS, S.A.
JOAQUIM & FERNANDES-ELECTRICIDADE E TELECOMUNICAÇÕES, LDA.
HACO-ETIQUETAS, S.A.
DAVITEX-ESTAMPARIA, S.A.
J. TAVARES & IRMAO, LDA.
CANDI - MALHAS E CONFECÇÕES, LDA.
SILVAS, S.A.
SPT-EMPRESA DE TRABALHO TEMPORARIO, LDA.
RAITH-EXPORTAÇÃO DE TEXTEIS, S.A.
METALURGICA BENAVENTENSE, LDA.
REALCALÇA-CONFECÇÕES, LDA.
MODELO HIPER IMOBILIARIA, S.A.
AMARAL & AMARAL-SGPS, S.A.
SOPORCEL-SOCIEDADE PORTUGUESA DE PAPEL, S.A. (SOPROCEL) INTER REDITUS-PRESTAÇÃO INTEGRADA DE SERVIÇOS INFORMATICOS,S.A.
EDIREVISTAS-SOCIEDADE EDITORIAL, S.A.
SOCIEDADE FRIGORIFICA DE PENICHE, S.A.
FABRICA NACIONAL DE TUBOS METALICOS OLIVA, S.A.
PORTGAS, SOCIEDADE DE PRODUÇÃO E DISTRIBUIÇÃO DE GAS, S.A.
SAPEC-AGRO, S.A.
EEM-EMPRESA DE ELECTRICIDADE DA MADEIRA, S.A.
TEBE - EMPRESA TEXTIL DE BARCELOS, S.A.
VIBEIRAS-SOCIEDADE COMERCIAL DE PLANTAS, S.A.
PROFITEXTIL-INDUSTRIA DE CONFECÇÕES, S.A.
UNIAO DE TRANSPORTES CARVALHOS, LDA.
COSTA & GARCIA-EQUIPAMENTOS INDUSTRIAIS, S.A.

TUPAI-FABRICA DE ACESSORIOS INDUSTRIAIS, S.A.
COMPANHIA INDUSTRIAL DE FUNDIÇÃO, S.A.
FINAGRA-SOCIEDADE INDUSTRIAL E AGRICOLA, S.A.
VINALDA-COMPANHIA COMERCIAL DE BEBIDAS, S.A.
REDITUS-SOCIEDADE GESTORA DE PARTICIPAÇÕES SOCIAIS, S.A.
SOCIEDADE AGRICOLA E COMERCIAL DOS VINHOS MESSIAS, S.A.
MODELO CONTINENTE HIPERMERCADOS, S.A.
COLEPCCL, PORTUGAL- EMBALAGENS E ENCHIMENTOS, S.A.
MODIS - DISTRIBUIÇÃO CENTRALIZADA, S.A.
PROBOS-RESINAS E PLASTICOS, S.A.
GRAPHICSLIDER PACKAGING, ARTES GRAFICAS, S.A.
CHAVESIDIS-SOCIEDADE DE DISTRIBUIÇÃO, S.A.
FERNANDES & TERCEIRO, LDA.
IBERSOL-SGPS,S.A.
RAMOS CATARINO, S.A.
LS LUIS SIMOES-SGPS, S.A.
GALLOVIDRO, S.A.
ROQUES-COMÉRCIO DE VEICULOS E SERVIÇOS, LDA
ANLORBEL-COMERCIO DE MATERIAIS DE CONSTRUÇÃO E DECORAÇÃO, SA
EDIMARANTE - SOCIEDADE DE CONSTRUÇÕES, LDA.
TECOR-TECNOLOGIA ANTICORROSAO, S.A.
MARTINS & FILHOS, S.A.
POMBO-INDUSTRIA METALURGICA, LDA.
LACTOGAL-PRODUTOS ALIMENTARES, S.A.
VULCANO-TERMO-DOMÉSTICOS, S.A.
AUTO-SUECO (COIMBRA) LDA
IRMAOS VILA NOVA, S.A.
TST-TRANSPORTES SUL DO TEJO, S.A.
VICAIMA - INDUSTRIA DE MADEIRAS E DERIVADOS, S.A.
RAIMUNDO & MAIA, LDA.
ORACLE PORTUGAL-SISTEMAS DE INFORMAÇÃO, LDA
ENGIARTE-ENGENHARIA E CONSTRUÇÕES, LDA.
SCHMITT - ELEVADORES, LDA
FSM-INDUSTRIA DE CONFECÇÕES, S.A.
MACRAL-SUPERMERCADOS DO ALGARVE, S.A.
IMPETUS PORTUGAL - TEXTEIS, S.A.
TERMOLAN-ISOLAMENTOS TERMO-ACUSTICOS, S.A.
FABRICA DE TECIDOS DE VIUVA DE CARLOS DA SILVA AREIAS & CIA, S.A.
PORMINHO - INDUSTRIA E COMERCIO DE CARNES, LDA.
JACINTO MARQUES DE OLIVEIRA,SUCESORES LDA
CASTRO & FILHOS, S.A.
J. SILVA MOREIRA & IRMAOS, LDA.
SAVANA - CALÇADOS, LDA.
IBERMETAIS - INDUSTRIA DE TREFILAGEM S.A.
APPAREL VENTURES EUROPA TEXTIL, LDA
ANTONIO MANUEL FERREIRA NUNES, LDA.
LEVIRA II-COMÉRCIO DE MOBILIARIO METALICO, S.A.
SACRAMENTO TEXTEIS, S.A.
TINTURARIA E ACABAMENTOS DE TECIDOS VALE DE TABUAS, LDA.
CLIMAR - INDUSTRIA DE ILUMINAÇÃO, S.A.
AZEMOLDES - MOLDES DE AZEMEIS, LDA.

METALCERTIMA-INDUSTRIA METALOMECANICA, S.A.
GRASIL-CONFECÇÕES, S.A.
ELECTRO AUTO MESQUITA, LDA.
MEDICINALIA-SOCIEDADE DE EQUIPAMENTOS HOSPITALARES, S.A.
MALHAS SONIX, S.A.
TRIMCO-EQUIPAMENTOS FRIGORIFICOS, LDA
GRANTOS DE MACEIRA, S.A.
VIVEIROS MONTEROSA, LDA
FABRICA DE FIAÇÃO E TECIDOS DE BARCELOS, LDA.
LINITALIA - INDUSTRIA TEXTIL, LDA.
SETRIC-PORTUGAL-PRODUTOS PARA A AQUARIOFILIA ANIMAIS DOMESTICOS, LDA.
JOAO RIBEIRO DA CUNHA, FILHOS, LDA.
VENTIL - ENGENHARIA DO AMBIENTE, LDA.
SOCOTRA-SOCIEDADE DE CONSTRUÇÕES DE TRAJOUCE, LDA.
RIBAPAO - SOCIEDADE PANIFICADORA, LDA.
PEREIRA & FERREIRA, LDA.
A. FIUZA & IRMAO, LDA.
PIMENTAS & COELHO, LDA.
M. MENDES SAMPAIO, S.A.
RECHAPAL-SOCIEDADE DE RECHAPAGEM E RECAUCHUTAGEM DE ALVAIAZERE, S.A.
CIMBO - MALHAS E CONFECÇÕES, LDA.
MADSIL-MADEIRAS SILVA, LDA.
ITAFLEX - FABRICA DE ARTIGOS PARA CALÇADO, LDA.
ELECTRO INSTALADORA A.M.CORREIA, S.A.
SOCER-COMÉRCIO E INDUSTRIA DE RESINAS, S.A.
PARTEXTIL-CONFECÇÕES TEXTEIS, LDA.
SOCIEDADE DE APARELHOS DE PRECISAO BRUNO JANZ (HERDEIROS), S.A.
PORTUGALIA-COMPANHIA PORTUGUESA DE TRANSPORTES AÉREOS, S.A.
IRMAOS MOTA & CIA., LDA.
FRICONDE - FABRICA DE FRIGORIFICOS DE VILA DO CONDE, SA.
EFACEC - SERVIÇOS DE MANUTENÇÃO E ASSISTENCIA, S.A.
COLDKIT IBERICA, MATERIAIS ISOLANTES, S.A.
THYSSENKRUPP PORTUGAL - AÇOS E SERVIÇOS, LDA.
SPAL-SOCIEDADE DE PORCELANAS DE ALCOBAGA, S.A.
P.L.F-MEIAS E COLLANTS, LDA.
BETAO LIZ, S.A.
M. & J. PESTANA-SOCIEDADE DE TURISMO DA MADEIRA, S.A.
MATERIAIS DE CONSTRUÇÃO CUNHA GOMES, S.A.
BERTEX - FABRICA DE CONFECÇÕES, S.A.
SERAFIM DA SILVA JERONIMO & FILHOS, LDA.
DIOGENES & SANTOS, LDA.
VIVEIROS S. JORGE, S.A.
A. SILVA, GODINHO & CIA., LDA.
MARQUES & ROMA, LDA.
GABELEX-INDUSTRIA DE TECTOS METALICOS, S.A
AMERICANA - PAPELARIAS, LIVRARIAS E EQUIPAMENTOS S.A.
FERNANDO MARQUES & IRMAO, S.A.
M. DA COSTA & SILVA, S.A.
JAMARCOL - ACESSORIOS PARA MOTORIZADAS, LDA.
LIDEL-EDIÇÕES TECNICAS, LDA
SUPERMANOS-IMPORTAÇÃO E EXPORTAÇÃO, LDA.

INAREL - INDUSTRIA DE LAVA-LOUÇAS INOX E ARTESANATO, LDA.
SOPACO - PRODUTOS E MAQUINAS PARA A INDUSTRIA ALIMENTAR, LDA.
SOCIEDADE GESTORA DE INICIATIVAS FINANCEIRAS SOGIN, S.A.
BEZERRAS IRMAOS, S.A.
J.A.ABRANTES PINHEIRO & FILHOS, LDA.
TRANSPORTES AÉREOS PORTUGUESES, S.A.
PORTUCEL VIANA-EMPRESA PRODUTORA DE PAPEIS INDUSTRIAIS, S.A.
BA VIDROS, S.A. (BA)
ROCA-CERAMICA E COMERCIO, S.A.
PORTELA & CIA., S.A.
JAIME RIBEIRO & FILHOS, S.A.
SIMOLDES-PLASTICOS, S.A.
LABESFAL - LABORATORIOS ALMIRO, S.A.
TEKA PORTUGAL, S.A.
PINTO & CRUZ, LDA.
EDIFICADORA LUZ & ALVES, LDA
SOGAPAL-SOCIEDADE GRAFICA DA PAIA, S.A.
NOVAGRES - INDUSTRIA DE CERAMICA, S.A
SEDA IBÉRICA-EMBALAGENS, S.A.
MAPREL-EMPRESA DE PAVIMENTOS E MATERIAIS PRE-ESFORÇADOS, LDA.
COFEMEL - SOCIEDADE DE VESTUARIO, S.A.
FABRICAS DE MOAGEM DO MARCO, S.A.
PANTRANS-TRANSITARIOS, S.A.
DATINFOR - INFORMÁTICA, SERVIÇOS E ESTUDOS, S.A
RODOVIARIA DO ALENTEJO, S.A.
SAVINOR - SOCIEDADE AVICOLA DO NORTE, S.A.
ISIDORO CORREIA DA SILVA, LDA.
METALURGICA DO LEVIRA, S.A.
SOCIEDADE COMERCIAL DO VOUGA, LDA.
ELECTRO SILUZ - ARTIGOS ELÉCTRICOS E ELECTRODOMÉSTICOS, S.A.
CAIFAI - MALHAS E CONFECÇÕES, LDA.
LISPREENE - PROJECTOS MECANICOS E FABRIS,S.A
IETA - INDUSTRIA DE ESTOFOS E TRANSFORMAÇÃO DE AUTOMOVEIS, S.A.
HABIMARANTE-SOCIEDADE DE CONSTRUÇÕES, S.A.
AGROQUISA-AGROQUIMICOS, S.A.
HENRIQUE VIEIRA & FILHOS, S.A.
FLAMA-FABRICA DE LOUÇAS E ELECTRODOMÉSTICOS, S.A.
MADECA-MADEIRAS DE CAXARIAS, LDA.
PRINTER PORTUGUESA-INDUSTRIA GRAFICA, LDA.
MECANARTE - METALURGICA DA LAGOA, LDA.
PINHEIRO DA ROCHA & CIA., S.A.
BENOLL-CONFECÇÕES, LDA.
TDN-TRANSPORTES DAVID NETO, S.A.
BELFAMA - EMPRESA TEXTIL, LDA.
CONSTRUTORA DA BAIRRADA - SOCIEDADE DE CONSTRUÇÕES, S.A.
JADIFEX - MALHAS E CONFECÇÕES, LDA.
AFA - PRODUÇÃO DE MOLDES, S.A.
FRANCISCO COELHO & FILHOS, LDA.
A. SILVA & SILVA-MADEIRAS, S.A.
TROFICOLOR - TEXTAIS, S.A.
ANCAL PLASTICOS, S.A.

CAMILO MARTINS FERREIRA & FILHOS, LDA.
MARCIAL MARTINS & IRMAOS, LDA.
ARIE & FILHOS, S.A.
CARLOS FREITAS & CIA., S.A.
MANUFACTURAS SANTOS, S.A.
INVESTIMENTOS HOTELEIROS DA BAIJA DE CASCAIS, S.A.
UNIAO PANIFICADORA CALDENSE, LDA.
J. GUERRA, LDA.
CONFETARIA FERREIRA, LDA.
SANTOS & CORDEIRO, LDA.
MALHA PRODUTORA, LDA.
CERUTIL - CERAMICAS UTILITARIAS, S.A.
COFANOR - COOPERATIVA DOS FARMACEUTICOS DO NORTE, C.R.L. (COFANOR)
FLOR DA MODA-CONFECÇÕES, S.A.
FABRICA DE TECIDOS MARIZÉ, LDA.
WURTH-PORTUGAL, TÉCNICA DE MONTAGEM, LDA.
ANTARTICA - EMPRESA PRODUTORA DE CALÇADOS, S.A.
PEDROSA & RODRIGUES, LDA.
INDUSTRIA DE CARNES FERREIRA, LDA.
VODAFONE PORTUGAL-COMUNICAÇÕES PESSOAIS, S.A.
RODOVIARIA DO TEJO, S.A.
CONTINENTAL MABOR - INDUSTRIA DE PNEUS, S.A.
ICB - INDUSTRIA CONDUTORES ELECTRICOS E TELEFONICOS, S.A
HESKA PORTUGUESA-INDUSTRIAS TIPOGRAFICAS, S.A.
MINIBEL INTERNACIONAL - INDUSTRIA DE CALÇADO, LDA.
TMN-TELECOMUNICAÇÕES MOVEIS NACIONAIS, S.A. (TMN)
RENOVA-FABRICA DE PAPEL DO ALMONDA, S.A.
MALAQUIAS DISTRIBUIÇÃO ALIMENTAR, LDA.
MARQUES SOARES, S.A.
DOM PEDRO - INVESTIMENTOS TURISTICOS, S.A.
FERNANDO SIMAO & FILHOS, LDA.
FABRICA DE COLCHAS S.DOMINGOS DE DIAS & FERREIRA, LDA.
CAETANO & MONT'ALVERNE, SGPS, S.A.
SABEL-DISTRIBUIÇÃO ELECTRICA, S.A.
A. BAPTISTA DE ALMEIDA, S.A.
INDUSTRIA DE CARNES DE LABRUGE, LDA
JOSE MARQUES GRACIO, S.A.
JEREMIAS DE MACEDO & CIA., LDA.
MOVIFLOR 2-COMERCIO DE MOVEIS E ELECTRODOMESTICOS, S.A.
JMA - SOCIEDADE GESTORA DE PARTICIPAÇÕES SOCIAIS, S.A.
AUTOMOVEIS CITROEN, S.A.
DOMINGOS DE SOUSA & FILHOS, S.A.
MOARA TEXTIL, LDA.
MOAGEM CERES A. DE FIGUEIREDO & IRMAO, S.A.
METALSINES-COMPANHIA DE VAGOES DE SINES, S.A.
SOCIEDADE TURISTICA DA PENINA, S.A.
FAPSUR - SOCIEDADE INDUSTRIAL DE MALHAS, S.A.
FINANÇOR - AGRO - ALIMENTAR, S.A.
SAINT-GOBAIN MONDEGO, S.A.
A.SILVA MATOS-METALOMECANICA, S.A.
RESOPRE-SOCIEDADE REVENDEDORA DE APARELHOS DE PRECISAO, S.A.

VILARTEX - EMPRESA DE MALHAS VILARINHO, LDA.
MAHLE-COMPONENTES DE MOTORES, S.A.
MOTA & TEIXEIRA, S.A.
JMR-GESTAO DE EMPRESAS DE RETALHO, SGPS, S.A.
DALMATA-INDUSTRIA DE CONFECÇÕES, LDA.
PROGADO-SOCIEDADE PRODUTORA DE RAÇÕES, S.A.
ITI-SOCIEDADE DE INVESTIMENTOS TURISTICOS NA ILHA DA MADEIRA, S.A. (ITI)
FONSECAS, COMÉRCIO E REPRESENTAÇÕES S.A.
GELPEIXE - ALIMENTOS CONGELADOS, S.A.
CIMPOMOVEL-VEICULOS PESADOS, S.A.
BORDALIMA - INDUSTRIA DE BORDADOS, S.A.
LAMEIRINHO - INDUSTRIA TEXTIL, S.A.
EMPRESA DE CONSTRUÇÕES AMANDIO CARVALHO, S.A.
AUTO-SUECO (MINHO) S.A.
AUTO INDUSTRIAL, S.A.
COOPERATIVA AGRICOLA DE BARCELOS, CRL.
OTIS ELEVADORES, LDA
CORTICEIRA AMORIM, SGPS, S.A.
CPC.DI-COMP.PORTUGUESA COMPUTADORES -DISTR.PRODUTOS INFORMATICOS, S.A. (CPCDI)
SOLVERDE-SOC.DE INVESTIMENTOS TURISTICOS DA COSTA VERDE, S.A. (SOLVERDE)
IRMAOS CAVACO, S.A.
ALELUIA - CERAMICA, COMÉRCIO E INDUSTRIA, S.A.
A. SAMPAIO & FILHOS-TEXTEIS, S.A.
CRIALME - FABRICAÇÃO, EXPORTAÇÃO E IMPORTAÇÃO DE CONFECÇÕES, LDA.
EFAPEL-EMPRESA FABRIL DE PRODUTOS ELÉTRICOS, S.A.
VAP-VEICULOS AUTOMOVEIS E PEÇAS, S.A.
AUTO - GARAGEM DE COIMBRA, LDA.
SOLINCA - INVESTIMENTOS TURISTICOS, S.A.
MONTACO-TRATAMENTOS ANTICORROSIVOS E CONSTRUÇÃO CIVIL, LDA.
JOROGASO - INDUSTRIA PORTUGUESA DE EQUIPAMENTOS PARA AUTOMOVEIS, LDA.
LISTOPSIS-TECNOLOGIA E ORGANIZAÇÃO PROD. E SISTEMAS DE INFORMAÇÃO,LDA.
IRMAOS COELHO TEXTEIS, S.A.
ENTREPOSTO LISBOA-COMÉRCIO DE VIATURAS, LDA.
SANITANA-FABRICA DE SANITARIOS DE ANADIA, S.A.
BOMBARDIER TRANSPORTATION (PORTUGAL), S.A.
UNILEITE-UNIAO COOP.AGRIC.LACT.E PROD.LEITE DA ILHA DE S.MIGUEL,UCRL
INTERAVES-SOCIEDADE AGRO-PECUARIA, S.A.
FERNANDO SIMAO-SOC.DE COMERCIO DE AUTOMOVEIS E REPRESENTAÇÕES, LDA.
FARAUTO-VEICULOS, EQUIPAMENTOS E SERVIÇOS, S.A.
TREVAUTO-COMÉRCIO, INDUSTRIA E REPRESENTAÇÕES, LDA.
DCB - COMPONENTES DE CALÇADO, LDA.
SANTOGAL H-COMERCIO E REPARAÇÃO DE VEICULOS, S.A.
CARNEIRO, CAMPOS & CIA., LDA.
DURIT-METALURGIA PORTUGUESA DO TUNGSTENIO, LDA.
MALHAS EICAL - EMPRESA INDUSTRIAL DO CAVADO, LDA.
RODOVIARIA D'ENTRE DOURO E MINHO, S.A.
SICALMA-SOC. INDUSTRIAL E COMERCIAL DE CARNES DE ALMADA E SEIXAL, LDA
UMBELINO MONTEIRO, S.A.
FARMOQUIMICA BALDACCI, S.A.
LARGIRO-MATERIAIS DE CONSTRUÇÃO CIVIL, LDA.
GRANDUPLA-FABRICA DE PLASTICOS S.A.

TRICANA - TAPEÇARIA REGIONAL DE COIMBRA, S.A.
NEIVA & PEREIRAS, S.A.
COOPRIBATEJO - COOPERATIVA DE CONSUMO, CRL
CAMBAS - CONFECÇÕES, S.A.
MARI-SPORT CALÇADO, LDA.
LIMA & CIA, S.A
RAMOSIL - INDUSTRIA TEXTIL, LDA.
AGOSTINHO MARTINS PEREIRA, LDA.
FESTA & FESTA, SA.
CARMO & SILVERIO, S.A.
ESTEVAO NEVES, SA
A TEXTIL DE SERZEDELO, S.A.
MANUEL COELHO BARBOSA & FILHOS, LDA.
ANTONIO VIEIRA DE ABREU & FILHOS, S.A.
CALÇADO RALY, LDA.
CORTIMOVEIS-COMERCIALIZAÇÃO E FABRICAÇÃO DE MOVEIS, LDA.
CAVES PRIMAVERA, S.A.
REILIMA-SOCIEDADE DE CONSTRUÇÕES, LDA.
NUTASA-NUTRIÇÃO ANIMAL E PRODUTOS PARA A PECUARIA, S.A.
EMAR-MALHAS E CONFECÇÕES, S.A.
GUEDETEXTIL - CONFECÇÕES, LDA.
IMAPO-PROJECTISTAS INSTALADORAS DE AGUAS E ESGOTOS DA MADEIRA,LDA.
INVESTAZÉ, LDA
SUMMAVIELLE, AMORIM & CIA., S.A.
CONFECÇÕES ALDAMAR DE ALFREDO DA COSTA GONÇALVES, LDA.
ADEGAS CAMILO ALVES, S.A.
H.B.FULLER PORTUGAL, PRODUTOS QUIMICOS, S.A.
FAPOR-FAIANÇAS DE PORTUGAL, S.A.
PROLACTO - LACTICINIOS DE S. MIGUEL, S.A.
PAVIMUR-PRE-FABRICADOS E PRE-ESFORÇADOS, LDA.
JULIO DA SILVA SAMPAIO & CIA., LDA.
AVELINO FARINHA & AGRELA, S.A.
PEDRO PESSOA, COMERCIO E INDUSTRIA TRANSF. TEXTIL E FERRAGENS, LDA.
SOMALIA - SOCIEDADE DE MALHAS, LDA.
JULIO JOSÉ DE MACEDO, LDA.
FABRICA DE TECIDOS DE SENRA, LDA.
GLOBAL NOTICIAS - PUBLICAÇÕES, S.A.
EMPRESA PUBLICA DE URBANIZAÇÃO DE LISBOA
GESTAMP AVEIRO - INDUSTRIA DE ACESSORIOS DE AUTOMOVEIS, S.A.
SAPROPOR-PRODUTOS ALIMENTARES, S.A.
BALBINO & FAUSTINO, LDA
AUTO-JARDIM DO ALGARVE-AUTOMOVEIS DE ALUGUER, S.A.
METALOCARDOSO - CONSTRUÇÕES METALICAS E GALVANIZAÇÕES, S.A.
TORREFACÇÃO CAMELO, LDA
MUNDINTER INTERCAMBIO MUNDIAL DE COMÉRCIO S.A.
FAMO-INDUSTRIA DE MOBILIARIO DE ESCRITORIO, LDA
IRMAOS DIAS, LDA.
FREITAS & IRMAOS, LDA.
LARBRINCA-BRINQUEDOS E UTILIDADES, LDA
CIFIAL-INDUSTRIA DE CERAMICA, S.A.
EGITÉCNICA - TÉCNICO CONSTRUTORA, S.A.

TRANSPORTES MANUEL PEDROSA SÉNIOR, LDA.
JOG-INDUSTRIAS TEXTEIS, SA
LOURITEXA - INDUSTRIA DE CONFECÇÕES, LDA.
IMPERIAL - PRODUTOS ALIMENTARES, S.A.
CARVITEX - MALHAS E CONFECÇÕES, LDA.
FIAT AUTO PORTUGUESA, S.A.
DHV FBO - CONSULTORES, S.A.
ANTERO BRANCAL & FILHOS, LDA.
JOSE A. S. SUCENA, S.A.
MANUEL NUNES & FERNANDES, S.A.
VALEO VIANA-EQUIPAMENTO PARA A INDUSTRIA AUTOMOVEL, LDA.
FUJITSU SERVICES-TECNOLOGIAS DE INFORMACAO, LDA
PECOL - SISTEMAS DE FIXACAO, S.A.
GARAGEM CENTRAL DE PENAFIEL, S.A.
HOTELGAL-SOCIEDADE DE HOTEIS DE PORTUGAL, S.A.
BLOCOTELHA-COBERTURAS METALICAS AUTOPORTANTES, LDA
METALURGICA CENTRAL DE ALHOS VEDROS, LDA
MAROUÇO, S.A.
ALBERTO SOUSA, LDA.
REGENCY TEXTEIS PORTUGUESA, LDA.
TIMALHA - TINTURARIA E ACABAMENTOS, S.A.
NAVARRA II-TRATAMENTO DE ALUMINIO, S.A.
SINDUTEX-SOCIEDADE INDUSTRIAL DE CONFECÇÕES, LDA.
SERRALHARIA O SETENTA, S.A.
FERREIRA LEITE & CIA., LDA.
B. SOUSA DIAS & FILHOS, S.A.
FABRIVESTE - FABRICA DE VESTUARIO, LDA.
ADICO-ADELINO DIAS COSTA-MOBILIARIO METALICO, LDA.
REALTEX - CONFECÇÃO E COMÉRCIO TEXTIL, LDA.
MATIR 2 - TEXTEIS DE PORTUGAL, S.A.
SANINDUSA-INDUSTRIA DE SANTARIOS, S.A.
HEWLETT-PACKARD PORTUGAL, LDA.
SORISA-ESTETICA E FISIOTERAPIA, S.A.
HIPER IMPERIO PNEUS, SA
PIMENTA & RENDEIRO-URBANIZAÇÕES CONSTRUÇÕES, S.A.
JOSE PINTO CARDOSO, LDA.
LISGRAFICA-IMPRESSAO E ARTES GRAFICAS, S.A.
FLORENCIO AUGUSTO CHAGAS, S.A.
SODICENTRO-COMÉRCIO DE VEICULOS, LDA.
TVG-EDITORA DE PUBLICAÇÕES E MULTIMÉDIA, LDA
PRE CERAM-INDUSTRIAS DE CONSTRUÇÃO, S.A.
CONSTRUÇÃO CIVIL GOUVEIA, LDA.
FABRICA DE CALÇADO DURA, LDA.
ICAP-INTERNACIONAL CERAMICA ARTISTICA PORTUGUESA, LDA.
MANUFACTURAS AEME, LDA.
RAÇOS VALOURO, S.A.
EMEF-EMPRESA DE MANUTENÇÃO DE EQUIPAMENTO FERROVIARIO, S.A. (EMEF)
JOAO DE DEUS & FILHOS, S.A.
CONSTRUTORA DO TAMEGA MADEIRA, S.A.
IBEROPA-CENTRO EUROPEU DE MATERIAIS DE CONSTRUÇÃO, LDA
MUNIVEL-MERCEARIAS REUNIDAS DE CHAVES, LDA.

TN-TRANSPORTES M. SIMOES NOGUEIRA, S.A.
LABELC-ESTUDOS, DESENVOLVIMENTOS E ACTIVIDADES LABORATORIAIS, S.A.
INDUCOL - INDUSTRIA DE PELETERIA CRUZ COSTA, S.A.
PINFEL-INDUSTRIA DE CALÇADO, S.A.
FABRICA DE FIAÇÃO E TECIDOS DO JACINTO, S.A.
TORRALTA-CLUB INTERNACIONAL DE FÉRIAS, S.A.
MANUEL VIEIRA & IRMAOS, LDA.
LANDINA - INDUSTRIA DE CALÇADO, LDA.
EFANOR-INDUSTRIA DE FIOS, S.A.
J. ESPIRITO SANTO & IRMAOS, LDA.
COPIPRONTO-SOCIEDADE DE REPRODUÇÃO DE DOCUMENTOS, LDA.
JOAQUIM SOUSA BRITO, S.A.
ABREU & IRMAO, LDA.
OLIVEIRA, FERNANDES & RIBEIRO, LDA.
SP PNEUS, LDA.
FABRICA DE MOVEIS S. CRISPIM, LDA.
COELHO & DIAS, S.A.
SAMOFIL - TEXTEIS, LDA.
FABRICA DE MALHAS FILOBRANCA, S.A.
FUTE-FABRICA DE UTILIDADES DE TUBO, LDA.
INDUFLEX-INDUSTRIA DE ESTOFOS, LDA.
FILOGRAFICA-IMPRESSAO E ARTES GRAFICAS, LDA.
VILA GALÉ-SOCIEDADE DE EMPREENDIMENTOS TURISTICOS, S.A.
FIMA-PRODUTOS ALIMENTARES, S.A.
TECNIBRAVA-CONSTRUÇÕES E OBRAS TÉCNICAS, LDA.
AMBAR IDEIAS NO PAPEL, S.A.
SELFRIIO - ENGENHARIA DO FRIO, S.A.
RESENDE - ACTIVIDADES TURISTICAS, S.A.
RENET-REDES DE ENERGIA E TELECOMUNICAÇÕES, S.A.
FABRICA DE CALÇADO KILAS, LDA.
PEREIRA & ROCHA, LDA.
A. FERREIRA PRAÇA & CIA., LDA.
FARSANA PORTUGAL - COMÉRCIO E INDUSTRIA, S.A.
ISO-SIGMA - ENERGIA E GESTAO, LDA.
NITIN - NOVA INDUSTRIA DE TINTAS, S.A.
SCHINDLER-ASCENSORES E ESCADAS ROLANTES, S.A.
MARPEI - ESTAMPARIA TEXTIL, SA
ABILEX-INDUSTRIA TEXTIL, S.A.
CONFECÇÕES LANÇA, LDA.
SOCIEDADE TEXTIL DA ASSENTA, S.A.
JOAQUIM FERREIRA GOMES & CIA., LDA.
CAMPOS & PINTO, LDA.
LEITE & OLIVEIRA, LDA.
PEREIRAS, LDA
METALURGICA DO TAMEGA DE TEIXEIRA & TORRES, LDA.
SOPLACAS-SOCIEDADE DE PLACAS DE BETAO, S.A.
SOTECNISOL- ISOLAMENTOS, ENGENHARIA E AMBIENTE, S.A
COSTA E SILVA & NASCIMENTO, LDA.
TECNISAN-CONSTRUÇÕES TECNICAS E SANEAMENTO, SA.
SOCIEDADE TEXTIL MOURAS DO PEREIRINHO, LDA
ISQ-INSTITUTO SOLDADURA E QUALIDADE

ISU-ESTABELECIMENTOS DE SAUDE E ASSISTENCIA, S.A.
ORGANIZACOES HOTELEIRAS BARATA, LDA
MELISAUTO-MERCADO LISBONENSE DE AUTOMOVEIS, S.A.
AUTOCABE - COMÉRCIO E REPARAÇÃO DE AUTOMOVEIS, LDA.
CILVET-COMERCIO INTERNACIONAL DE VESTUARIO, LDA.
CARPINFER-CARPINTARIAS MECANICAS E ARTISTICAS, S.A.
SIC-SOCIEDADE INDEPENDENTE DE COMUNICAÇÃO, S.A. (SIC)
RED PORTUGUESA-PUBLICIDADE EXTERIOR, S.A.
CAMPOVOVO & CAMARA, S.A.
XANIVOR-PORTUGUESA, ELECTRO METALURGICA, LDA.
SONAE INDUSTRIA, SGPS S.A.
TAP -TRANSPORTES AÉREOS PORTUGUESES, SGPS S.A.
SOQUIFA-MEDICAMENTOS, S.A.
VISTA ALEGRE ATLANTIS, S.A.
EPME - EMPRESA PORTUGUESA DE MONTAGENS ELÉCTRICAS, S.A.
MANUEL CARVALHO, S.A.
INSTITUTO PORTUARIO E DOS TRANSPORTES MARITIMOS
FERGRUPO-CONSTRUÇÕES E TÉCNICAS FERROVIARIAS, S.A.
TEBE HOLDING SGPS, S.A.
ALVENOBRA-SOCIEDADE DE CONSTRUÇÕES, LDA.
SANINDUSA 2 INDUSTRIA DE SANITARIOS SA
CINALDA-CONSULTADORIA DE GESTAO, LDA.
IBERLIM AÇORES-LIMPEZAS TÉCNICAS, SOCIEDADE UNIPessoal, LDA.
FITLENE - TEXTEIS ARTIFICIAIS, S.A.
FICACEM COMÉRCIO E REPARAÇÃO DE AUTOMOVEIS, LDA.
FABRICA DE CALÇADO CAMPEAO PORTUGUES, S.A.
ARMASUL-DISTRIBUIDOR DE MATERIAIS ELECTRICOS, S.A.
INEGI - INSTITUTO DE ENGENHARIA MECANICA E GESTAO INDUSTRIAL
CTLIMPE-SOCIEDADE DE LIMPEZAS, LDA.
CUF-QUIMICOS INDUSTRIAIS, S.A.
FROMAGERIES-BEL PORTUGAL, S.A.
PROMOTOR-SOCIEDADE GESTORA DE PARTICIPAÇÕES SOCIAIS, S.A.
PLASTAZE-PLASTICOS DE AZEMEIS, S.A.
EURONEXT LISBON-SOCIEDADE GESTORA MERCADOS REGULAMENTADOS,S.A.
BETOPAL-BETOES PREPARADOS, S.A.
TRANSTEJO - TRANSPORTES TEJO, S.A.
NUTROTON-INDUSTRIAS DA AVICULTURA, SA.
FUNDAÇÃO EUGENIO DE ALMEIDA
SUPERCORTE - EMPRESA DE CONFECÇÕES, S.A.
BABCOCK LUSITANA-TUBAGENS INDUSTRIAIS, SA.
OLIVEIRA & MORAIS, LDA.
DELOITTE CONSULTORES S.A.
DOCAPESCA-PORTOS E LOTAS, S.A..
BELIAPE - AVICULTURA E PECUARIA, S.A.
SOMAGUE - ENGENHARIA, S.A.
NEO - FARMACEUTICA, LDA.
DEROVO-DERIVADOS DE OVOS, S.A.
CONSTRUTORA DA FERRARIA, S.A.
ALSTOM PORTUGAL, S.A.
HENRIQUES, FERNANDES & NETO, LDA.
TECNIFAR-INDUSTRIA TECNICA FARMACEUTICA, S.A.

CIMPOR PORTUGAL, SGPS, SA
SANTOGAL-SGPS, S.A.
MARTIFER-CONSTRUÇÕES METALOMECHANICAS, S.A.
MOVIFLOR 7 - COMÉRCIO DE MOBILIARIO, S.A.
FOSFOREIRA PORTUGUESA, SA
SONAFI - SOCIEDADE NACIONAL DE FUNDIÇÃO INJECTADA, S.A.
GLOBAL SOURCE - SERVIÇOS E INDUSTRIA, S.G.P.S., S.A.
UPONOR-CONSTRUÇÃO E AMBIENTE-SISTEMAS DE TUBAGENS, S.A.
NEORELVA-EMBALAGENS METALICAS, S.A.
JERONIMO MARTINS-SERVIÇOS, S.A.
BETOMINHO-SOCIEDADE DE CONSTRUÇÕES, S.A.
LENA ENGENHARIA E CONSTRUÇÕES (AÇORES), S.A.
PAPELEIRA PORTUGUESA, S.A.
GESCARTAO-SGPS, S.A.
VMPS-DISTRIBUIÇÃO DE BEBIDAS, S.A.
A.A. SILVA-IMOVEIS, COMÉRCIO E INDUSTRIA, S.A.
HIDROCONTRATO-CONTRATAÇÃO, COORD. DE EMPREENDIMENTOS ENGENHARIA, LDA.
RADIO NOTICIAS-PRODUÇÕES E PUBLICIDADE, S.A.
SPORT LISBOA E BENFICA-FUTEBOL, SAD
TIMA-TRACTORES INDUSTRIAIS, AGRICOLAS E MAQUINAS PARA MADEIRAS, S.A.
ALELUIA-CERAMICAS, S.A.
GIERLINGS VELPOR-VELUDO PORTUGUES, S.A.
AUGUSTO GONÇALVES MOREIRA & IRMAO, S.A.
KIND - PERFIS E DERIVADOS, S.A.
BRISA-AUTO ESTRADAS DE PORTUGAL, S.A.
PARPUBLICA - PARTICIPAÇÕES PUBLICAS (SGPS), S.A.
PINGO-DOCE-DISTRIBUIÇÃO ALIMENTAR, S.A.
IVECO PORTUGAL-COMÉRCIO DE VEICULOS INDUSTRIAIS, S.A.
GAMOBAR, SGPS, S.A
PORTCAST-FUNDIÇÃO NODULAR,S.A.
KILOM-SOCIEDADE AGRICOLA E PECUARIA DA QUINTA DOS LOMBOS, S.A.
LITHO FORMAS PORTUGUESA-IMPRESSOS CONTINUOS E MULTIPLOS, S.A.
METALURGIA ALGUERRA - FABRICA DE COMPONENTES CARROÇARIAS AUTO, S.A.
CABOVISAO-TELEVISAO POR CABO, S.A.
EXTRUSAL - COMPANHIA PORTUGUESA DE EXTRUSAO, S.A.
GCT - SOCIEDADE IMOBILIARIA, S.A.
SAINT-GOBAIN SEKURIT PORTUGAL-VIDRO AUTOMOVEL, S.A.
ELECTRO CENTRAL VULCANIZADORA, LDA.
CANDY HOOVER PORTUGAL, LDA
WHATEVERNET COMPUTING-SISTEMAS DE INFORMAÇÃO EM REDE, S.A.
GRESPOR-FABRICA DE GRES PORCELANICO, S.A.
INCOVECA-GRANITOS, S.A.
LINK CONSULTING, TECNOLOGIAS DE INFORMAÇÃO, S.A.
PAVIGRES - CERAMICAS, S.A.
ETMA-EMPRESA TÉCNICA DE METALURGIA, S.A.
RADIO E TELEVISAO DE PORTUGAL, SGPS, S.A. (RTP)
SOMELOS-SGPS, S.A.
TECHNOEDIF ENGENHARIA, S.A.
SOMELOS-FIOS, S.A.
SONAECOM-SGPS,S.A.
VINOCOR - INDUSTRIA DE CORTIÇA, LDA.

PATRICIOS, S.A.
PMH-PRODUTOS MEDICO-HOSPITALARES, S.A.
GABRITEX-CONFECÇÕES TEXTÉIS, LDA.
EFACEC-AMBIENTE, S.A.
MARINA DE VILAMOURA, S.A.
FAPRICELA-INDUSTRIA DE TREFILARIA, S.A.
FORTUNATO O. FREDERICO & CIA., LDA.
RECER INVESTIMENTOS SGPS., S.A.
PARAREDE-SGPS, S.A.
ETERMAR-EMPRESA DE OBRAS TERRESTRES E MARITIMAS, S.A.
TECNOSPIE, S.A.
RANHADA & TEIXEIRA, LDA.
MACONDE-SGPS, S.A.
SOVIAL-SOCIEDADE DE VIATURAS DE ALUGUER, LDA.
J. PINTO, S.A.
ENTREPOSTO SETUBAL-COMÉRCIO DE VIATURAS E MAQUINAS, S.A.
INSTITUTO NACIONAL DE ESTATISTICA
TEGOPI - INDUSTRIA METALOMECANICA, S.A.
ENDUTEX-TINTURARIA E ACABAMENTO DE MALHAS, S.A.
FABRICA DE MALHAS SACOLE, S.A.
COINDU - COMPONENTES PARA A INDUSTRIA AUTOMOVEL, S.A.
ASSOCIAÇÃO EMPRESARIAL DE PORTUGAL
CONDOP-CONSTRUÇÃO E OBRAS PUBLICAS, S.A.
CIMPOMOTOR - VEICULOS AUTOMOVEIS, S.A.
RAÇÕES PROGADO CENTRO-SUL, S.A.
SOMOTA - SGPS, S.A.
COFINA-SGPS, S.A.
SUCH-DALKIA-SERVIÇOS HOSPITALARES, A.C.E.
CARREFOUR (PORTUGAL)-SOCIEDADE DE EXPLORAÇÃO DE CENTROS COMERCIAIS, S.A.
D.L.S.-DISTRIBUIÇÃO LUIS SIMOES, S.A.
ADRETA-PLASTICOS, S.A.
ENTREPOSTO-GESTAO E PARTICIPAÇÕES (SGPS), S.A.
CERTAR-SOCIEDADE DE CONSTRUÇÕES, SA
PREVENÇÃO RODOVIARIA PORTUGUESA
COPIGES - SISTEMAS INFORMATICOS, S.A.
MITSUBISHI FUSO TRUCK EUROPE-SOCIEDADE EUROPEIA DE AUTOMOVEIS, S.A.
DILOP-PRODUTOS ALIMENTARES, S.A.
LABORATORIOS ATRAL, S.A.
SOFARIMEX-INDUSTRIA QUIMICA E FARMACEUTICA, LDA
ACTARIS-SISTEMAS DE MEDIÇÃO, LDA.
PEGOP-ENERGIA ELECTRICA, SA.
DILOP CHARCUTARIA-COZIDOS E FUMADOS, S.A.
PLASTEUROPA-EMBALAGENS, S.A.
GRAVINER-CONSTRUÇÕES, S.A.
GRAFIASA-INDUSTRIA GRAFICA, S.A.
TINTROFA-TINTURARIA DA TROFA, S.A.
RUBETAO-PRE-FABRICADOS DE BETAO, S.A.
INFINITUM-INDUSTRIA DE CONFECÇÕES, LDA.
COGUMELO-SOC. EMPREENDIMENTOS TECNICOS, COMERCIAIS E INDUSTRIAIS, LDA
RENAULT NISSAN PORTUGAL, S.A.
CIMPOR BETAO-INDUSTRIA DE BETAO PRONTO, S.A.

EDP PRODUÇÃO EM - ENGENHARIA E MANUTENÇÃO, S.A.
CLARIANT-QUIMICOS (PORTUGAL), UNIPessoal, LDA.
MASCRUZ - FABRICA DE FERRAGENS, S.A.
TECMACAL - MAQUINAS E ARTIGOS PARA CALÇADO, S.A.
DAVION-INDUSTRIA DE VESTUARIO, S.A.
SOMELOS - TECIDOS, S.A.
BOLAS-MAQUINAS E FERRAMENTAS DE QUALIDADE, S.A.
MOB-INDUSTRIA DE MOBILIARIO, S.A.
G. S. RODRIGUES-CONFECÇÕES, S.A.
RESIQUIMICA - RESINAS QUIMICAS, S.A.
HUF PORTUGUESA-FABRICA DE COMPONENTES PARA O AUTOMOVEL, LDA.
DUNIL - CONFECÇÕES, LDA.
SIVEL - SOCIEDADE INDUSTRIAL DE VESTUARIO, LDA.
MOVIFLOR 3-COMERCIO DE MOBILIARIO, S.A.
ENELEC-PROJECTOS E MONTAGENS ELECTRICAS E DE INSTRUMENTOS, S.A.
SONAE SIERRA, SGPS S.A.
CS-ACESSORIOS, SOBRESSALENTES E VEICULOS, LDA.
OPCA-OBRAS PUBLICAS E CIMENTO ARMADO, S.A. (OPCA)
DALKIA-ENERGIA E SERVIÇOS, S.A.
VISABEIRA-SOCIEDADE TECNICA DE OBRAS E PROJECTOS, LDA.
HOSPOR-HOSPITAIS PORTUGUESES, S.A.
BELGADOS-SOCIEDADE DE GADOS, LDA.
SERRALEITE-COOPERATIVA AGRICOLA DOS PRODUTORES LEITE DE PORTALEGRE, C.R.L.
MANUEL FRANCISCO DE ALMEIDA, S.A.
SOCIEDADE DE CONSTRUÇÕES MAIA & MAIA, S.A.
ARCOTEX - FABRICA DE MALHAS, S.A.
PESCARIAS BEIRA LITORAL, S.A.
ALBERTO ROQUE, LDA
URBIVEDROS - EMPREITEIROS, LDA.
CENTRO DESPORTIVO VALE DE LOBO, LDA.
SOCIEDADE AGRICOLA DE PIAS
IRMAOS FERNANDES, S.A.
CONSTRUCAO EDIFICIO SOL-MAR S.A.
PAINHAS, S.A.
EMPOBOR-EMPRESA PORTUGUESA DE BORRACHAS, LDA.
COOP.PRODUÇÃO E CONSUMO DOS EMPREG.BANCARIOS-COOP.BANCARIOS, C.R.L.
MIRANDELA-ARTES GRAFICAS, S.A.
KONICA MINOLTA-BUSINESS SOLUTIONS PORTUGAL, SOCIEDADE UNIPessoal, LDA.
ACIT-ASSISTENCIA E CONDUÇÃO DE INSTALAÇÕES TÉCNICAS, S.A.
RIBACARNE-MATADOURO REGIONAL DO RIBATEJO NORTE, S.A.
2045-EMPRESA DE SEGURANÇA, S.A.
SOPOVICO-SOCIEDADE PORTUGUESA DE VIAS DE COMUNICAÇÃO, SA.
TELCABO-TELECOMUNICAÇÕES E ELECTRICIDADE, LDA.
MOTA-ENGIL, S.G.P.S., S.A.
OLIVEIRA & IRMAO, S.A.
CASA DA SORTE-ORGANIZAÇÃO NOGUEIRA DA SILVA, S.A.
MANUEL JOAQUIM ORVALHO, S.A.
HCI-CONSTRUÇÕES, S.A.
SAO CONRADO-AUTOMOVEIS, S.A.
LISBOAS & CIA., LDA.
NAVALRIA - DOCAS, CONSTRUÇÕES E REPARAÇÕES NAVAIS, S.A.

EUROSPUMA-SOCIEDADE INDUSTRIAL DE ESPUMAS SINTETICAS, S.A.
SOLPLENO-HOTELARIA E TURISMO, S.A.
SOCTIP-SOCIEDADE TIPOGRAFICA, S.A.
AUTOGARME - AUTO GARAGEM DE MATOSINHOS, S.A.
PORTUCEL EMPRESA PRODUTORA DE PASTA E PAPEL, S.A.
TERTIR - TERMINAIS DE PORTUGAL, S.A. (TERTIR)
JIMBOLO-PANIFICADORA, S.A.
ANHAS - COMÉRCIO DE AUTOMOVEIS E EQUIPAMENTOS, LDA.
J. GOMES - SOCIEDADE DE CONSTRUÇÕES DO CAVADO, S.A.
TS-THOMAZ DOS SANTOS, S.A.
COPAM-COMPANHIA PORTUGUESA DE AMIDOS, S.A.
VIDROPOL - ESTRATIFICADOS DE FIBRA DE VIDRO, S.A.
CARVEMA TEXTIL, LDA.
COCIGA-CONSTRUÇÕES CIVIS DE GAIA, S.A.
SUMOLIS-COMPANHIA INDUSTRIAL DE FRUTAS E BEBIDAS, S.A.
INAPA-INVESTIMENTOS, PARTICIPAÇÕES E GESTÃO, S.A. (INAPA)
PEUGEOT CITROEN AUTOMOVEIS PORTUGAL, S.A.
F. RAMADA-AÇOS E INDUSTRIAS, S.A.
SCHAEFFLER PORTUGAL, S.A.
SONY PORTUGAL, LDA
SELENIS-INDUSTRIA DE POLIMEROS, S.A.
TEODORO GOMES ALHO & FILHOS, LDA
RAR - REFINARIAS DE AÇUCAR REUNIDAS, S.A. (RAR)
FETAL-MODA INTERNACIONAL, S.A.
PORTUGAL TELECOM SGPS, S.A.
MODELO CONTINENTE S.G.P.S., S.A.
DOMINGOS DA SILVA TEIXEIRA, S.A.
TEVIZ-TEXTIL VIZELA, S.A.
MANUEL F.MONTEIRO & FILHO - REPRESENTAÇÕES E COMERCIO, LDA.
LIMPOTECNICA-SOCIEDADE DE LIMPEZA TÉCNICA E MECANICA, LDA
TRANSGAS-SOCIEDADE PORTUGUESA DE GAS NATURAL, S.A.
SANTOS BAROSA-VIDROS, S.A.
CIPAN-COMPANHIA INDUSTRIAL PRODUTORA DE ANTIBIOTICOS, S.A.
METALURGICA PROGRESSO DE VALE DE CAMBRA, S.A.
GRUPO SOARES DA COSTA, SGPS, S.A.
CINCA - COMPANHIA INDUSTRIAL DE CERAMICA, S.A. (CINCA)
BASTOS VIEGAS, S.A.
TELEJAS - SOCIEDADE DE OBRAS E PROJECTOS, S.A.
ELECTROCLIMA - ELECTRICIDADE DE CLIMATIZAÇÃO, LDA.
VIATEL-TECNOLOGIA DE COMUNICAÇÕES, S.A.
RIBERALVES-COMERCIO E INDUSTRIA DE PRODUTOS ALIMENTARES, S.A.
EDIVISA - EMPRESA DE CONSTRUÇÕES, S.A.
LUIS VICENTE, S.A.
AMAL - CONSTRUÇÕES METALICAS, S.A.
A COLMEIA DO MINHO, S.A.
FRANCISCO ANTONIO MALCATO
TODOMOVEL-FABRICA DE SISTEMAS, MOVEIS E ESTRUTURAS, LDA.
POSTEREDE - POSTES ELÉCTRICOS, S.A.
FLOSEL-INSTALAÇÕES ELÉCTRICAS E HIDRAULICAS, LDA.
ANDALUGA-ALUGUER DE ANDAIMES E MAQUINAS PARA A CONSTRUÇÃO, LDA.
MANUEL SANTOS & LIMA, LDA.

GARLAND TRANSITOS, LDA.
PINHOL, GOMES & GOMES, LDA.
COBELBA - SOCIEDADE DE CONSTRUÇÃO CIVIL, S.A.
ACACIO DA CARIDADE FERREIRA & IRMAO, LDA.
NOVINCO - NOVAS INDUSTRIAS DE MATERIAIS DE CONSTRUÇÃO, S.A.
CONSTRUTORA ABRANTINA, S.A.
FLEXIPOL - ESPUMAS SINTETICAS, S.A.
PROMOL-INDUSTRIA DE VELAS, S.A.
KROMBERG & SCHUBERT-PORTUGAL, LDA.
ARNAUD - GERMANO SERRAO ARNAUD (TRANSITARIOS), LDA.
JODOFER - EMPREITEIROS, S.A.
PRIMUS VITORIA - AZULEJOS, S.A.
NAEF, LDA.
EUROTHERMO - PRODUTOS ELECTRICOS, LDA.
MARQUES & PINHO, LDA.
SEGOSAL-SOCIEDADE DE EMPREITADAS GOMES DE SA, LDA
MARPE - CONSTRUÇÕES E INSTALAÇÕES TÉCNICAS, S.A.
COFINCA-COMERCIO E INDUSTRIA DE CONFECÇÕES, S.A.
GRESART-CERAMICA INDUSTRIAL, S.A.
COMPANHIA IBM PORTUGUESA, S.A.
JULAR-MADEIRAS, SA
PT PRIME - SOLUÇÕES EMPRESARIAIS DE TELECOMUNICAÇÕES E SISTEMAS, S.A.
JOP - VEICULOS E PEÇAS, S.A.
JOMAFRA - MALHAS E CONFECÇÕES, LDA.
VESAUTO-AUTOMOVEIS E REPARAÇÕES, S.A.
ANTONIO MEIRELES, S.A.
LIVING COLOURS-TEXTEIS, S.A.
MAFIROL - INDUSTRIA DE EQUIPAMENTOS, S.A.
LINDE SOGAS, LDA.
CIMPOR-INDUSTRIA DE CIMENTOS, S.A.
ARSOL - PLASTICOS, LDA.
CIVIBRAL-SISTEMAS DE CONSTRUÇÃO, S.A.
SECIL-COMPANHIA GERAL DE CAL E CIMENTO, S.A.
PETROLEOS DE PORTUGAL-PETROGAL, S.A. (PETROGAL)
SEMAPA-SOCIEDADE DE INVESTIMENTO E GESTÃO, SGPS, S.A.
CIN-CORPORAÇÃO INDUSTRIAL DO NORTE, S.A. (CIN)
GESTIFER-SOCIEDADE GESTORA DE PARTICIPAÇÕES SOCIAIS, SA.
ACORIL - EMPREITEIROS, S.A.
CORTICEIRA AMORIM-INDUSTRIA, S.A.
TRANSINSULAR-TRANSPORTES MARITIMOS INSULARES, S.A.
FABRICA LEIRIENSE DE PLASTICOS, S.A.
INAPA PORTUGAL-DISTRIBUIÇÃO DE PAPEL, S.A. (SDP)
PIRBETAO-PIMENTA E RENDEIRO, LDA.
CIMPOMOVEL-GESTÃO E PARTICIPAÇÕES, S.A.
SOCIEDADE DA AGUA DE LUSO, S.A.
EDIÇÕES IRISCOR-SOC. INDUSTRIAL, COM. EM BRINDES PUBLICITARIOS, LDA
SOCIEDADE DE EMPREITADAS ADRIANO, S.A.
FRANCISCO PEREIRA MARINHO & IRMAOS, S.A.
MORISA - CALDEIRAS E EQUIPAMENTOS INDUSTRIAIS, S.A.
ALCOBRE-CONDUTORES ELECTRICOS, S.A.
CARLOS SAMPAIO TEIXEIRA & IRMAO, LDA.

SILVA, BRANDAO & FILHOS, LDA.
HEMAPALI - MONTAGENS ELECTRICAS, LDA.
GUILHERME CALDAS PEIXOTO & CIA., LDA.
HIDROPROJECTO-ENGENHARIA E GESTAO, S.A.
CAETANO & CAETANO, LDA.
FIT-FOMENTO DA INDUSTRIA DO TOMATE, S.A.
PINTO BAR - EXPLORACAO AVICOLA, LDA.
ALFREDO JOSE RIBEIRO FERNANDES & FILHOS, LDA.
CORTEBEL-EXPORTADORA DE CALÇADO, LDA.
EMPRESA MADEIRENSE DE TABACOS, S.A.
HOTELAGOS, S.A.
NARCISO MACHADO & CIA., S.A.
ANTONIO N. NOBREGA, S.A.
KEY PLASTICS PORTUGAL, S.A.
INDUSTRIAS LEVER PORTUGUESA, S.A.
COMPANHIA DE LINHA COATS & CLARK, S.A.
CONSTRUÇÕES ANTONIO JOAQUIM MAURICIO, LDA.
MANUEL JOAQUIM PINTO, S.A.
DESCO-FABRICA PORTUGUESA MATERIAL ELÉCTRICO E ELECTRONICO, S.A.
MSS-CONSTRUTORA, S.A.
SITACO-SOCIEDADE INDUSTRIAL DE TACOS DE CORUCHE, LDA
DELEME-INDUSTRIAS DA CONSTRUÇÃO, S.A.
INDUSTRIAS DO FUNDAO, LDA
SNESGES-ADMINISTRAÇÃO E GESTAO DE IMOVEIS E PRESTAÇÃO DE SERVIÇOS,S.A.
ANTONIO RODRIGUES MOTA & FILHOS,LDA.
AISSOLA-SOCIEDADE EUROPEIA DE CONFECÇÕES, S.A.
TEXMARTINS-INDUSTRIA TEXTIL, LDA
REEVES - IMOBILIARIA, S.A.
LTO-LAVOURAS E TERRAPLANAGENS DO OESTE, LDA.
TURBOMAR-ENERGIA,EQUIPAMENTOS DE PRODUÇÃO E SERVIÇOS ASSISTENCIA,LDA
SOCIEDADE METALURGICA MARINHENSE, LDA.
VALENTE MARQUES - COMERCIAL, S.A.
GIANTO-INDUSTRIA DE VESTUARIO, LDA.
JORGE BAPTISTA DA SILVA & IRMAO, S.A.
BARROS, ALMEIDA & CIA. - VINHOS, S.A.
VERACA - INDUSTRIA TEXTIL DE VERMOIM, S.A.
FABRICA DE CALÇADO SOZE, LDA.
ANTONIO AUGUSTO DIAS DE MATOS, LDA.
INDUSTRIAS JOMAR-MADEIRAS E DERIVADOS, S.A.
MOTA-ENGL, ENGENHARIA E CONSTRUÇÃO, S.A
CLINICA CENTRAL DO BONFIM, S.A.
ECOP-EMPRESA DE CONSTRUÇÕES E OBRAS PUBLICAS ARNALDO DE OLIVEIRA S.A. (ECOP)
RIO BRAVO-INDUSTRIA DE VESTUARIO, S.A.
TRANDEFIL-INDUSTRIA DE PLASTICOS, S.A.
MANUEL LOPES & LOPES, S.A.
METALGRUPO-SOCIEDADE CONSTRUÇÕES E MONTAGENS METALOMECHANICAS, LDA.
JOSE JOAQUIM CORNACHO & FILHOS, LDA.
MATIMAR-CONFECÇÕES, IMPORTAÇÃO E EXPORTAÇÃO, SA
E. FERREIRA & MACHADO, LDA.
COVELO & PINTO, LDA.
SICEL-SOCIEDADE INDUSTRIAL DE CEREAIS, S.A.

DOMINGOS MIRANDA & FERNANDES, LDA.
MENDES-TRANSPORTES, S.A.
ARQUICON CONSTRUTORA, LDA
HENRIQUE PEREIRA DO COUTO, SUCRS, LDA.
NOVA EMPRESA INDUSTRIAL DE CURTUMES, S.A.
TERELIX - CONFECÇÕES, LDA.
POLO - INDUSTRIAS DE VESTUARIO,LDA.
WHIRLPOOL PORTUGAL-ELECTRODOMESTICOS, LDA.
NEC PORTUGAL-TELECOMUNICAÇÕES E SISTEMAS, S.A.
FABRICA DE TABACO MICAELENSE, S.A.
CAMIONAGEM ROSA D'OURO, S.A.
PENSILTEX - INDUSTRIA DE CONFECÇÕES, LDA.
ACTARIS - IMOBILIARIA, S.A.
FELGUI - INDUSTRIA E COMÉRCIO DE CALÇADO, LDA.
NOVAIS SOUSA & CIA., LDA.
OK BAZAR-COMÉRCIO GERAL, S.A.
FUJITSU TELECOMUNICAÇÕES PORTUGAL, S.A.
NUCASE-CONTABILIDADE E ASSISTENCIA FISCAL, S.A
ARPITEX-COMERCIO E INDUSTRIA DE CONFECÇÕES, LDA
FRIGOCON-INDUSTRIA DE FRIO E CONGELAÇÃO, S.A.
COSTA & VALERIO, LDA.
BLACK & DECKER
MECANICA PIEDENSE, LDA
TRICIVIL-OBRA PUBLICAS E CONSTRUÇÃO CIVIL, SA
FRUTOGAL-INDUSTRIA E COMÉRCIO DE PRODUTOS ALIMENTARES, LDA
MANUEL RORIZ DE OLIVEIRA, S.A.
F. CARVALHO & COSTA, LDA.
CONSTRUCTORA SAN JOSE, S.A.(PONTEVEDRA) REP. EM PORTUGAL
FERRINDAL-INDUSTRIA DE ALUMINIO E FERRO, LDA.
LIVRARIA BERTRAND-SOCIEDADE DE COMÉRCIO LIVREIRO, S.A.
A. SANTOS, LDA.
A.FERREIRA DA COSTA, FILHO & CIA., LDA.
COMPANHIA DO PAPEL DO PRADO, S.A.
RICARVEST - INDUSTRIA DE CONFECÇÃO, LDA.
REBEL-REPRESENTANTES EQUIPAMENTOS BRITANICOS DE ENGENHARIA, LDA.
CUF-COMPANHIA UNIAO FABRIL, SGPS, S.A.
SOCIEDADE DE CONSTRUÇÕES SOARES DA COSTA, S.A.
BAYER CROPSCIENCE PORTUGAL-PRODUTOS PARA AGRICULTURA, LDA.
EUGSTER & FRISMAG - ELECTRODOMÉSTICOS, LDA.
CIMIANTO-SOCIEDADE TÉCNICA DE HIDRAULICA, S.A.
MADEIPORTO - MADEIRAS E DERIVADOS, S.A.
KEYLAB - SERVIÇOS TÉCNICOS DE LOGISTICA,S.A.
STET-SOCIEDADE TÉCNICA DE EQUIPAMENTOS E TRACTORES, S.A. (STET)
SUMOL-GESTAO DE MARCAS, S.A.
TRACEVIA-SINALIZAÇÃO SEGURANÇA E GESTAO DE TRAFEGO, LDA.
IC COMPANY PORTUGAL, LDA
SCHNEIDER ELECTRIC PORTUGAL - APARELHAGEM ELECTRICA, LDA.
PT COMUNICAÇÕES, S.A.
GDP-GAS DE PORTUGAL, SGPS, S.A.
ABEL SANTIAGO, LDA.
PT-MULTIMÉDIA SERVIÇOS TELECOMUNICAÇÕES E MULTIMÉDIA, SGPS, S.A.

IMPRESA-SOCIEDADE GESTORA DE PARTICIPAÇÕES SOCIAIS, S.A.
AMBITAT MOVEIS, LDA.
ECCO'LET (PORTUGAL) FABRICA DE SAPATOS, LDA.
FARAME-FABRICA DE ARTIGOS DE ARAME, S.A.
COMPANHIA INDUSTRIAL QUINTAS & QUINTAS, SGPS., S.A.
LABORATORIOS VITORIA, S.A.
EUROCABOS-CONDUTORES ELECTRICOS DE TECNOLOGIA AVANÇADA, S.A.
HIDROCLIMA-SOCIEDADE DE PROJECTOS E INST.HIDRAULICAS E TERMICAS, S.A.
TRANSPORTES LUIS SIMOES, S.A.
MULTITEMPO-EMPRESA DE TRABALHO TEMPORARIO, LDA.
SOMAGUE-SOCIEDADE GESTORA DE PARTICIPAÇÕES SOCIAIS, S.A.
QUINTAS & QUINTAS-CORDOARIAS E REDES, S.A.
FERRAZ, LYNCE, S.A.
ENSUL - GESTAO DE PROJECTOS DE ENGENHARIA, S.A.
SERVILIMPE-LIMPEZAS TÉCNICAS MECANIZADAS, S.A
COFACO-COMERCIAL E FABRIL DE CONSERVAS, S.A. (COFACO)
JOMARPI - SOCIEDADE DE FABRICO E REPRESENTAÇÕES DE CALÇADO, LDA.
CHRISTIAN-SAPATARIAS, S.A.
GRANITALVES-GRANITOS E OBRAS PUBLICAS, S.A.
ARTIFEL-SOCIEDADE ELECTRONICA E ELECTROMECHANICA, SA.
EDIMADE-EDIFICADORA DA MADEIRA, S.A.
REPSOL POLIMEROS, LDA.
SOCIEDADE DE INDUSTRIALIZAÇÃO DE PRODUTOS AGRICOLAS-SOPRAGOL, S.A.
A. FERREIRA & FILHOS, S.A.
CIMPOR - CIMENTOS DE PORTUGAL, SGPS, S.A. (CIMPOR)
AUTOMOVEL CLUB DE PORTUGAL
EMPILHADORES DE PORTUGAL-COMERCIO E INDUSTRIA, S.A.
ALCATEL PORTUGAL,S.A.
NOVOPCA-CONSTRUTORES ASSOCIADOS, S.A.
AUTO-SUECO, LDA.
PAPELARIA FERNANDES-INDUSTRIA E COMERCIO, S.A.
GENERAL CABLE CELCAT-ENERGIA E TELECOMUNICAÇÕES, S.A.
PHILIPS PORTUGUESA, S.A.
OBRECOL-OBRAS E CONSTRUÇÕES, S.A.
UNIAO DOS FARMACEUTICOS DE PORTUGAL, C.R.L.
J. SOARES CORREIA - ARMAZÉNS DE FERRO, S.A.
NEOPUL-SOCIEDADE DE ESTUDOS E CONSTRUÇÕES, S.A.
BRACARA-EXPORTADORES CONFECÇÕES, LDA.
EDIMETAL-SOLUÇÕES INDUSTRIAIS DE METALOMECANICAS E CARPINTARIAS, S.A.
EPOS-EMPRESA PORTUGUESA DE OBRAS SUBTERRANEAS, LDA
SOCIEDADE COMERCIAL OREY ANTUNES, S.A.
ALBERTO MARTINS DE MESQUITA & FILHOS,S.A
CAMINHOS DE FERRO PORTUGUESES, EP.
TOMAS DE OLIVEIRA, EMPREITEIROS, S.A.
BAVIERA - COMERCIO DE AUTOMOVEIS, S.A.
MOLAFLEX - COLCHOES, S.A.
PEDRO & PAULO ARAUJO - PLASTICOS, S.A.
IMOBILIARIA CONSTRUTORA GRAO PARA, S.A.
SONAE - SOC.GESTORA DE PARTICIPAÇÕES SOCIAIS, S.A. (SGPS)
RELOPA - ELECTRODOMESTICOS, TERMICA E VENTILAÇÃO, S.A.
TEIXEIRA DUARTE-ENGENHARIA E CONSTRUÇÕES, S.A.

COMPANHIA CARRIS DE FERRO DE LISBOA, S.A.
BEIROBRA-SOCIEDADE DE CONSTRUÇÕES, S.A.
SOLVAY PORTUGAL-PRODUTOS QUIMICOS, S.A.
SANTOS & GOMES PEREIRA, LDA.
EMPREITEIROS CASAIS DE ANTONIO FERNANDES DA SILVA, S.A.
GLOBAL DIS-DISTRIBUIÇÃO GLOBAL DE MATERIAIS, S.A.
RAMAZZOTTI, S.A.
A.SILVA & SILVA-GESTAO E SERVIÇOS, S.A.
OCP PORTUGAL-PRODUTOS FARMACEUTICOS, S.A.
JERONIMO MARTINS, SGPS, S.A.
GERMEN-MOAGEM DE CEREAIS, S.A.
FIOR-COMPANHIA PORTUGUESA DE TEXTEIS, S.A.
ESPART-ESPIRITO SANTO PARTICIPAÇÕES FINANCEIRAS (S.G.P.S.), S.A. (ESPART)
CONSTRUÇÕES METALICAS SOCOMETAL, S.A.
SACOR MARITIMA, S.A.
JOSE DA COSTA & FILHOS, LDA.
MAFIROL-INDUSTRIA DE REFRIGERAÇÃO, S.A.
ICA-INDUSTRIA E COMERCIO ALIMENTAR, S.A.
A. FONTES, S.A.
FORTE DE S. JOAO-SOCIEDADE IMOBILIARIA E TURISTICA, S.A.
COPIDATA INDUSTRIAL-GRAFICA E EQUIPAMENTOS, S.A.
UNILEVER BESTFOODS PORTUGAL PRODUTOS ALIMENTARES, S.A.
SOMINCOR-SOCIEDADE MINEIRA DE NEVES CORVO, S.A.
TEXTEIS TEXDIA,S.A.
CARNES VALINHO, S A
CUNHA BASTOS, LDA.
TINTAS DYRUP, S.A.
SUPERMERCADOS A.C. SANTOS, S.A.
RODRIGUES & CAMACHO, CONSTRUÇÕES, S.A.
GUIA-SOCIEDADE DE CONSTRUÇÕES E TURISMO, S.A.
FEPSA - IMOBILIARIA E INVESTIMENTOS, S.A.
I.M. INAPAL METAL, S.A.
SOPORCOL - SOCIEDADE PORTUENSE DE CONFECÇÕES, S.A.
EDIFER-SOCIEDADE GESTORA DE PARTICIPAÇÕES SOCIAIS, S.A.
NEXTIRAONE PORTUGAL-SOLUÇÕES SERVIÇOS INTEGRADOS DE COMUNICAÇÕES, LDA
PARQUE EXPO 98, S.A.
SOMELOS MIX-FIOS TEXTEIS, S.A.
REDE FERROVIARIA NACIONAL - REFER, E.P.
SONAE-INDUSTRIA DE REVESTIMENTOS, S.A.
CUF-ADUBOS DE PORTUGAL, S.A. (ADP)
SPORTING-SOCIEDADE DESPORTIVA DE FUTEBOL, SAD
CONFETIL - CONFECÇÕES TEXTEIS, S.A.
SONDAGENS RODIO, LDA.
GASPAR CORREIA-INSTALAÇÕES TÉCNICAS ESPECIAIS, S.A.
SOMELOS - ACABAMENTOS TEXTEIS, S.A.
JEFAR-INDUSTRIA DE CALÇADO,S.A.
APDL-ADMINISTRAÇÃO DOS PORTOS DO DOURO E LEIXOES, S.A.
PROLOGICA-SISTEMAS INFORMATICOS, S.A.
COMPANHIA INDUSTRIAL DE RESINAS SINTÉTICAS CIRES, S.A. (CIRES)
RAMALHO ROSA-COBETAR, SOCIEDADE CONSTRUÇÕES, S.A.
CME-CONSTRUÇÃO E MANUTENÇÃO ELECTROMECHANICA, S.A. (CME)

SALVADOR CAETANO-IND.METALURGICAS E VEICULOS DE TRANSPORTE, S.A.
BAYER PORTUGAL, S.A.
ACO - FABRICA DE CALÇADO, S.A.
DINIZ & CRUZ-VESTUÁRIO DO HOMEM, LDA.
HOTEL EDUARDO VII, S.A.
EFACEC CAPITAL, SGPS, S.A. (EFACEC)
GRÜNENTHAL, S.A.
SIEMENS, S.A.
MANUFACTURAS MECANICAS FLEXUS, SA
ARCO TEXTEIS, S.A.
MECI-GESTAO DE PROJECTOS DE ENGENHARIA, S.A.
SOTAVE - SOCIEDADE TEXTIL DOS AMIEIROS VERDES, S.A.
SOUSA PEDRO-PROJECTOS E GESTAO DE INSTALAÇÕES TECNICAS, S.A.
PIRITES ALENTEJANAS, S.A.
R. TELES - CONFECÇÕES, LDA.
FAMETAL-FABRICA PORTUGUESA DE ESTRUTURAS METALICAS, S.A.
SOTÉCNICA-SOCIEDADE ELECTROTÉCNICA, S.A.
FUNDIÇÕES DO ROSSIO DE ABRANTES, S.A.
SONAE INDUSTRIA-SGPS S.A.
COMPANHIA AGRICOLA DA BARROSIHA, S.A.
SERVIÇOS DE TELECOMUNICAÇÕES E ELECTRONICA, S.A.
BRIEL-INDUSTRIA DE ELECTRODOMÉSTICOS, S.A. COMPANHIA PORTUGUESA HIGIENE PHARMA-PRODUTOS FARMACEUTICOS, S.A.
VALINDO-GESTAO DE IMOVEIS, S.A.
ALCO-ALGODOEIRA COMERCIAL E INDUSTRIAL, S.G.P.S., S.A. (ALCO)
BASCOL-INVESTIMENTOS, SGPS, S.A.
MOVELPARTES-COMPONENTES PARA A INDUSTRIA DO MOBILIARIO, S.A.
FISIPE-FIBRAS SINTETICAS DE PORTUGAL, S.A. (FISIPE)
FUNDINIO-FUNDAÇÃO INJECTADA DE ALUMINIO, S.A.
QUINTAS & QUINTAS-CONDUTORES ELÉCTRICOS, S.A.
LISBOAGAS GDL-SOCIEDADE DIST.GAS NATURAL DE LISBOA, S.A. (GDL)
ESTABELECIMENTOS J.B. FERNANDES, S.A.
SOCIEDADE DE TRANSPORTES COLECTIVOS DO PORTO, S.A.
VAA-VISTA ALEGRE ATLANTIS, SGPS, S.A.
COMPTA-EQUIPAMENTOS E SERVIÇOS DE INFORMATICA, S.A.
COMPANHIA NACIONAL DE FIAÇÃO E TECIDOS DE TORRES NOVAS, S.A.
SOMAGUE-EDIÇOR, ENGENHARIA, S.A.
CONSTRUTORA DO TAMEGA, S.A.
RIOX-INDUSTRIAS METALOELÉCTRICAS, S.A.
ESTORIL - SOL SGPS, S.A.
CELULOSE BEIRA INDUSTRIAL (CELBI) S.A.
CNB-CAMAC - COMPANHIA NACIONAL DE BORRACHAS, S.A. LACTICOOP-UNIAO DE COOP.PRODUTORES LEITE DE ENTRE DOURO MONDEGO,UCRL. (LACTICOOP)
LONGA VIDA - INDUSTRIAS LACTEAS, S.A.
COOP.DE PRODUÇÃO DOS OPERARIOS PEDREIROS PORTUENSES, C.R.L.
PROFABRIL-ENGENHARIA, S.A.
CONTACTO-SOCIEDADE DE CONSTRUÇÕES, S.A.
SOCIEDADE DE CONSTRUÇÕES H.HAGEN, S.A.
LUSOSIDER-AÇOS PLANOS, S.A.
EDP-ENERGIAS DE PORTUGAL, S.A. (EDP)
SOCIEDADE FIGUEIRA PRAIA, S.A.

LISNAVE-ESTALEIROS NAVAIS, S.A.
GESTNAVE-PRESTAÇÃO DE SERVIÇOS INDUSTRIAIS, S.A.

Appendix 2. 2 - Descriptive statistics for employees, ROA and PM

Variables	N		Std. Deviation	Sig. ¹²	Skewness		Kurtosis		Coef. Skewness	Coef. Kurtosis
	Valid	Mean			Statistic	Std. Error	Statistic	Std. Error		
Var.Emp2005	303	,00558	,147590	,000	1,246	,140	15,257	,279	8,9	54,68459
Var.Emp2004	355	,02086	,257859	,000	10,097	,129	143,698	,258	78,27132	556,969
Var.Emp2003	352	,02747	,562455	,000	13,531	,130	210,805	,259	104,0846	813,9189
Var.Emp2002	321	-,00787	,127075	,000	2,459	,136	16,812	,271	18,08088	62,0369
Var.Emp2001	296	,06715	,283545	,000	6,650	,142	59,181	,282	46,83099	209,8617
Var.Emp2000	308	,07198	,573955	,000	15,352	,139	256,567	,277	110,446	926,2347
Var.Emp1999	376	,03291	,249652	,000	3,290	,126	27,427	,251	26,11111	109,2709
Var.Emp1998	535	,10298	,575057	,000	10,129	,106	129,450	,211	95,5566	613,5071
Var.Emp1997	563	,06128	,318512	,000	9,975	,103	119,977	,206	96,84466	582,4126
Var.Emp1996	277	,03130	,208312	,000	3,989	,146	27,997	,292	27,32192	95,88014
Var.Emp1995	129	,01915	,168285	,000	2,772	,213	16,563	,423	13,01408	39,15603
Var.Emp1994	19	,07213	,144085	,000	1,130	,524	,495	1,014	2,156489	0,488166
ROA2005	952	2,5846	9,56926	,000	,158	,079	11,355	,158	2	71,86709
ROA2004	1246	2,2817	8,87879	,000	,107	,069	7,229	,139	1,550725	52,00719
ROA2003	1297	1,4488	9,67619	,000	-1,220	,068	17,096	,136	-17,9412	125,7059
ROA2002	1205	1,8334	9,26006	,000	-,515	,070	10,586	,141	-7,35714	75,07801
ROA2001	1093	2,4369	8,81314	,000	-,967	,074	16,359	,148	-13,0676	110,5338
ROA2000	1095	3,023	9,1234	,000	-1,473	,074	26,228	,148	-19,9054	177,2162
ROA1999	1094	3,5588	8,11218	,000	,293	,074	11,304	,148	3,959459	76,37838
ROA1998	1066	3,8750	8,36344	,000	,413	,075	14,279	,150	5,506667	95,19333
ROA1997	1069	3,2804	8,90459	,000	-2,017	,075	27,524	,149	-26,8933	184,7248
ROA1996	1057	2,9506	8,11100	,000	,316	,075	10,794	,150	4,213333	71,96
ROA1995	519	2,0098	8,33523	,000	-,537	,107	12,123	,214	-5,01869	56,64953
ROA1994	251	1,6228	7,94510	,000	,208	,154	5,114	,306	1,350649	16,71242
ROA1993	65	-1,0318	10,33703	,000	-2,401	,297	8,888	,586	-8,08418	15,16724
PM2005	945	1,5506	10,75840	,000	-1,836	,080	19,341	,159	-22,95	121,6415
PM2004	1239	,8210	11,86638	,000	-2,359	,070	19,393	,139	-33,7	139,518
PM2003	1287	,4215	10,98604	,000	-2,525	,068	18,336	,136	-37,1324	134,8235
PM2002	1194	,7522	11,76124	,000	-1,967	,071	22,402	,141	-27,7042	158,8794
PM2001	1079	1,5047	10,10094	,000	-2,364	,074	26,129	,149	-31,9459	175,3624
PM2000	1084	2,1610	9,13308	,000	-2,440	,074	23,515	,148	-32,973	158,8851
PM1999	1081	2,5778	9,15864	,000	-3,148	,074	30,391	,149	-42,5405	203,9664
PM1998	1055	2,6954	8,29810	,000	-1,203	,075	26,160	,150	-16,04	174,4
PM1997	1056	1,9312	9,06733	,000	-4,338	,075	40,320	,150	-57,84	268,8
PM1996	1046	1,3322	9,37565	,000	-4,520	,076	38,384	,151	-59,4737	254,1987
PM1995	517	,4663	9,50623	,000	-4,235	,107	34,315	,214	-39,5794	160,3505
PM1994	249	-,2856	10,18608	,000	-3,508	,154	21,697	,307	-22,7792	70,67427
PM1993	63	-2,0429	12,48064	,000	-4,348	,302	23,633	,595	-14,3974	39,71933

¹² Kolmogorov-Smirnov

Appendix 2. 3 - Means and Significant differences of transversal effects for
DOWNSIZER and NO DOWNSIZER firms

	<i>DOWNSIZERS</i> <i>NO DOWNSIZERS</i>	vs Variables N	<i>t-1</i>	<i>SIG</i> ¹³	<i>t</i>	<i>SIG</i>	<i>t+1</i>	<i>SIG</i>	<i>t+2</i>	<i>SIG</i>
1994	DOWNSIZERS	ROA	-3,6367		,0967		-5,4133		,7367	
		N	3		3		3		3	
		PM	-2,6867		,1333		-2,8600		,4967	
	NO DOWNSIZERS	ROA	-1,3625	,219	1,5269	,695	2,3840	,086	2,7440	,441
		N	16		16		15		15	
		PM	-3,7553	,110	-,4662	,655	1,7560	,051	1,9547	,515
		N	15		16		15		15	
	<i>DOWNSIZERS</i> <i>NO DOWNSIZERS</i>	vs Variables	<i>t-1</i>	<i>SIG</i> ¹⁴	<i>t</i>	<i>SIG</i>	<i>t+1</i>	<i>SIG</i>	<i>t+2</i>	<i>SIG</i>
1995	DOWNSIZERS	ROA	-,0687		-1,6787		2,7363		1,5809	
		N	30		30		27		23	
		PM	-1,9493		-,9837		2,6137		1,1709	
	NO DOWNSIZERS	ROA	2,0839	,278	1,8947	,267	2,1417	,761	3,2232	,176
		N	99		99		90		76	
		PM	-,1936	,369	,6030	,481	1,4263	,531	1,3921	,263
		N	99		99		89		76	
	<i>DOWNSIZERS</i> <i>NO DOWNSIZERS</i>	vs Variables	<i>t-1</i>	<i>SIG</i> ¹⁵	<i>t</i>	<i>SIG</i>	<i>t+1</i>	<i>SIG</i>	<i>t+2</i>	<i>SIG</i>
1996	DOWNSIZERS	ROA	-,3266		,7184		-,5900		1,0716	
		N	56		56		46		43	
		PM	-,5671		,0482		,5778		,3217	
	NO DOWNSIZERS	ROA	3,0148	,004	3,6699	,000	3,8944	,037	4,1429	,057
		N	221	***	221	***	190	***	168	
		PM	2,1431	,011	1,9896	,001	2,1789	,180	2,7882	,069
		N	220	***	221	***	190		168	
	<i>DOWNSIZERS</i> <i>NO DOWNSIZERS</i>	vs Variables	<i>t-1</i>	<i>SIG</i> ¹⁶	<i>t</i>	<i>SIG</i>	<i>t+1</i>	<i>SIG</i>	<i>t+2</i>	<i>SIG</i>
1997	DOWNSIZERS	ROA	,0013		1,5129		2,8123		3,0004	
		N	90		90		79		78	
		PM	-,7415		1,8715		2,8725		3,2296	
	NO DOWNSIZERS	ROA	3,6392	,004	4,0474	,306	4,2863	,980	3,6397	,968
		N	473	***	472		431		434	
		PM	2,1824	,015	2,8173	,624	3,1227	,549	2,9694	,743
		N	471	***	472		430		432	
	<i>DOWNSIZERS</i> <i>NO DOWNSIZERS</i>	vs Variables	<i>t-1</i>	<i>SIG</i> ¹⁷	<i>t</i>	<i>SIG</i>	<i>t+1</i>	<i>SIG</i>	<i>t+2</i>	<i>SIG</i>
1998	DOWNSIZERS	ROA	1,2002		1,6026		1,3068		,162	
		N	95		95		88		83	
		PM	1,5340		1,5290		1,9558		1,8588	
	NO DOWNSIZERS	ROA	4,1515	,175	4,5570	,030	4,0446	,016	3,181	,127
		N	93		92		85		80	
		PM								

¹³ Mann-Whitney Test

¹⁴ Mann-Whitney Test

¹⁵ Mann-Whitney Test

¹⁶ Mann-Whitney Test

¹⁷ Mann-Whitney Test

1999	<i>NO DOWNSIZERS</i>	N	439		440	***	410	***	395		
		PM	3,0716	,180	3,3320	,042	3,2408	,087	2,4173	,628	
		N	438		439	***	408		394		
	<i>DOWNSIZERS</i> vs	Variables	t-1	SIG ¹⁸	t	SIG	t+1	SIG	t+2	SIG	
	<i>NO DOWNSIZERS</i>	ROA	2,5392		2,4463		,628		,4071		
		N	89		89		84		77		
		PM	1,2067		1,7180		,7602		,9161		
	<i>NO DOWNSIZERS</i>	N	87		87		82		75		
		ROA	4,4034	,003	4,2964	,012	4,231	,005	3,4656	,044	
		N	287	***	287	***	270	***	260	***	
	<i>NO DOWNSIZERS</i>	PM	3,8288	,007	3,8458	,051	3,7685	,032	2,5017	,321	
		N	283	***	282		266	***	257		
<i>DOWNSIZERS</i> vs		Variables	t-1	SIG ¹⁹	t	SIG	t+1	SIG	t+2	SIG	
2000	<i>NO DOWNSIZERS</i>	ROA	-,1114		1,094		,0604		-,5402		
		N	50		50		45		45		
		PM	,3973		1,1194		-,6730		-,6836		
	<i>NO DOWNSIZERS</i>	N	49		49		44		44		
		ROA	4,1859	,012	3,643	,009	2,9239	,057	2,7857	,053	
		N	258	***	258	***	242		249		
	<i>NO DOWNSIZERS</i>	PM	3,5060	,020	3,0694	,026	2,3235	,030	1,6732	,081	
		N	254	***	254	***	238	***	247		
		<i>DOWNSIZERS</i> vs	Variables	t-1	SIG ²⁰	t	SIG	t+1	SIG	t+2	SIG
	2001	<i>NO DOWNSIZERS</i>	ROA	-,613		-1,3031		-,1178		-,9856	
			N	50		51		49		50	
			PM	-,2454		-1,0656		-1,0409		-2,8557	
<i>NO DOWNSIZERS</i>		N	48		48		47		49		
		ROA	3,948	,001	2,8680	,006	1,9186	,070	1,7885	,091	
		N	245	***	245	***	239		240		
<i>NO DOWNSIZERS</i>		PM	3,3652	,004	2,0223	,006	1,1855	,084	1,4683	,050	
		N	242	***	243	***	238		240		
		<i>DOWNSIZERS</i> vs	Variables	t-1	SIG ²¹	t	SIG	t+1	SIG	t+2	SIG
2002		<i>NO DOWNSIZERS</i>	ROA	-,6919		-1,0788		-,3683		2,5415	
			N	98		97		98		94	
			PM	-,2199		-1,2388		-1,7630		,0419	
	<i>NO DOWNSIZERS</i>	N	94		95		98		94		
		ROA	3,3622	,003	3,0151	,001	2,6829	,084	3,3664	,846	
		N	223	***	223	***	222		206		
	<i>NO DOWNSIZERS</i>	PM	3,2465	,011	2,8291	,001	2,1247	,105	2,6748	,559	
		N	220	***	219	***	219		203		
		<i>DOWNSIZERS</i> vs	Variables	t-1	SIG ²²	t	SIG	t+1	SIG	t+2	SIG
	2003	<i>NO DOWNSIZERS</i>	ROA	,7030		-,7773		2,4223		1,6968	
			N	121		121		107		90	
			PM	-,9724		-2,4033		-,2713		,3815	
<i>NO DOWNSIZERS</i>		N	120		122		107		89		
		ROA	2,7440	,004	3,2439	,000	3,7468	,206	3,2035	,103	
		N	230	***	230	***	214		191		
<i>NO DOWNSIZERS</i>		PM	3,0062	,002	2,8393	,000	2,9443	,122	3,3067	,074	
		N	226	***	227	***	212		188		

¹⁸ Mann-Whitney Test

¹⁹ Mann-Whitney Test

²⁰ Mann-Whitney Test

²¹ Mann-Whitney Test

²² Mann-Whitney Test

	<i>DOWNSIZERS</i> vs <i>NO DOWNSIZERS</i>	Variables	t-1	SIG ²³	t	SIG	t+1	SIG	t+2	SIG	
2004	<i>DOWNSIZERS</i>	ROA	,6169		1,1609		1,1287		NDA		
		N	80		81		63		NDA		
		PM	-,2318		,1922		,1513		NDA		
		N	80		80		62		NDA		
	<i>NO DOWNSIZERS</i>	ROA	2,2386	,018	3,3806	,009	2,9852	,082	NDA	NDA	
		N	274	***	274	***	232		NDA		
		PM	,8215	,036	1,7018	,030	2,6792	,202	NDA	NDA	
		N	273	***	274	***	230		NDA		
	2005	<i>DOWNSIZERS</i>	ROA	1,0130		1,9478		NDA		NDA	
			N	69		69		NDA		NDA	
PM			,5022		1,9672		NDA		NDA		
N			69		69		NDA		NDA		
<i>NO DOWNSIZERS</i>		ROA	3,1345	,178	2,5403	,167	NDA	NDA	NDA	NDA	
		N	234		234		NDA		NDA		
		PM	3,0751	,091	2,7953	,127	NDA	NDA	NDA	NDA	
		N	232		231		NDA		NDA		

Appendix 2. 4 - Means and Significant differences of longitudinal effects for
DOWNSIZER firms

		<i>T+2</i>	<i>T+1</i>	<i>T</i>	<i>T-1</i>
ROA _{t-1}	MEAN	1,7672	1,5180	1,2724	1,283
	Sig ²⁵	,715	,413	,456	---
PM _{t-1}	MEAN	1,5635	1,7425	1,0480	,5907
	Sig.	,462	,021*	,956	---

* Sig. <0,05

²³ Mann-Whitney Test

²⁴ Mann-Whitney Test

²⁵ Wilcoxon Test

Appendix 3. 1 – Questionnaire

Questionário:
(In)segurança no emprego e compromisso: efeitos nos comportamentos inovadores
2005

NOTAS INICIAIS E INSTRUÇÕES GERAIS

1 Este questionário destina-se a um trabalho de investigação inserido no doutoramento "Novas tendências na gestão de empresas" na Universidade de Salamanca e desde já se agradece muitíssimo a sua colaboração.
2 O tempo médio de resposta é de 3 a 5 minutos.
3 Garante-se o anonimato e o uso dos dados para fins académicos.
Os comportamentos inovadores dos indivíduos são fundamentais ao processo de inovação das organizações. Entende-se por inovação a geração ou a implementação de ideias novas. **Para que os comportamentos inovadores possam ocorrer, alguns factores podem assumir um papel determinante: a insegurança percebida no emprego ou o compromisso para com a organização são exemplos disso. Assim, de acordo com o seu caso pessoal e as suas percepções, responda, colocando um X na quadricula adequada.**

(In)segurança no emprego e compromisso

1 Pensando no futuro e em relação ao seu emprego actual, qual é a probabilidade, para si, de:

1.1 "Subir na organização" e ser promovido. 1 - Muito improvável

1.2 Conseguir um aumento no seu salário. 3 - Nem provável Nem improvável

1.3 Programar ou desenvolver o seu próprio trabalho da melhor forma. 5 - Muito provável

1.4 Perder o seu emprego sendo transferido para um nível hierárquico inferior.

1.5 O seu futuro nesta organização ser incerto.

1.6 Perder o seu emprego, sendo despedido.

1.7 Permanecer neste emprego daqui a 6 meses.

1.8 Perder o seu emprego, sendo pressionado a aceitar uma reforma antecipada.

Indique o seu grau de acordo ou de desacordo com as seguintes afirmações sobre a sua habilidade para modificar situações que o possam afectar ou ao seu emprego nesta organização.

1.9 Eu tenho o poder suficiente nesta organização para controlar situações que possam afectar o meu emprego. 1 - Fortemente em desacordo

1.10 Nesta organização posso prevenir aspectos negativos para que não afectem a minha situação profissional. 3 - Nem de acordo Nem em desacordo

5 - Fortemente de acordo

2 Indique o seu grau de acordo ou de desacordo com as seguintes afirmações sobre o seu compromisso para com a organização.

2.1 Eu gostava de permanecer nesta organização até ao fim da minha vida profissional. 1 - Fortemente em desacordo

2.2 Eu sinto os problemas desta organização como se fossem meus. 3 - Nem de acordo Nem em desacordo

2.3 Eu sinto que pertenço a esta organização. 5 - Fortemente de acordo

2.4 Sinto-me emocionalmente ligado a esta organização.

2.5 Neste momento, permanecer nesta organização é uma necessidade para mim.

2.6 Muito da minha vida sairia prejudicada se eu decidisse sair agora desta organização.

2.7 Existem poucas alternativas profissionais disponíveis noutras empresas.

2.8 Sinto uma obrigação de permanecer nesta organização.

2.9 Ainda que fosse vantajoso para mim, não creio que fosse correcto sair desta organização.

2.10 Não sairia desta organização, pois sinto-me em obrigação para com as pessoas da organização.

Os comportamentos inovadores

3 No seu emprego actual, com que frequência:

3.1 Observa oportunidades para melhorar um produto, tecnologia, mercado ou processo existente? 1 - Nada frequentemente

3.2 Tenta observar novas formas de fazer as coisas? 3 - Indiferente

3.3 Lê revistas, jornais, faz formação ou vai a congressos para conhecer novas ideias ou soluções? 5 - Muito frequentemente

3.4 Gera ideias ou soluções para resolver problemas ou situações difíceis?

3.5 Apresenta ideias ou soluções novas?

3.6 Toma iniciativas de melhoria?

3.7 Tenta persuadir os outros da importância de uma nova ideia ou solução?

3.8 Impulsiona as ideias e soluções para que possam ter a possibilidade de serem implementadas?

3.9 Experimenta novas ideias ou soluções?

3.10 Trabalha os erros das novas soluções quando as aplica a novos produtos, processos, tecnologias ou mercados?

3.11 Contribui e ajuda em novas ideias e soluções dos outros?

3.12 Experimenta fazer as coisas de uma nova maneira?

3.13 Testa as novas ideias ou soluções?

Dados de identificação

4 Sexo:

4.1 Masculino

4.2 Feminino

5 Idade:

5.1 16 a 25

5.2 26 a 35

5.3 36 a 45

5.4 46 a 55

5.5 mais de 56

6 Habilitações académicas:

6.1 até ao 9º ano

6.2 9º a 12º ano

6.3 Bacharelato

6.4 Licenciatura

6.5 Mestrado

6.6 Doutoramento

7 Estado Civil:

7.1 Solteiro(a)/Divorciado(a)/Viúvo(a)

7.2 Casado(a)/União de facto

8 E-mail:

9 Departamento:

9.1 Departamento de inovação

Departamento de recursos humanos

Departamento financeiro

Departamento administrativo

Departamento de comunicação e marketing

Departamento de negócios empresariais

Departamento de apoio ao cliente

Departamento de qualidade

Departamento de compras e logística

Departamento de engenharia

Outro. Indique qual:

10 Categoria profissional:

10.1

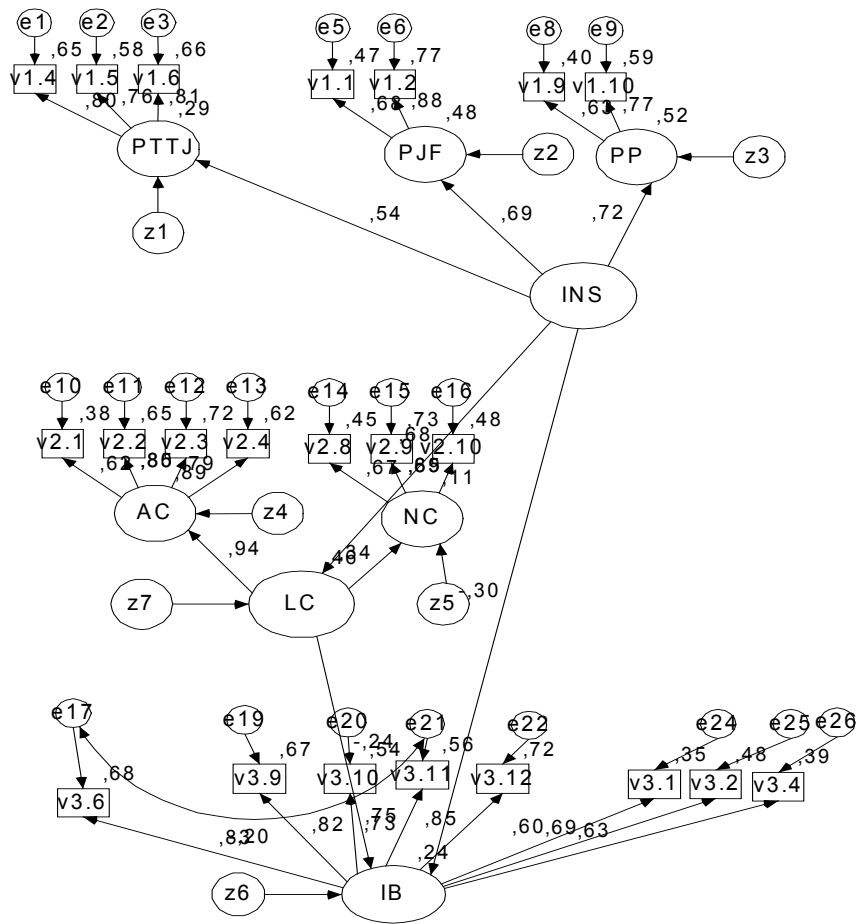
Observações: Anote todas as observações que considere convenientes para uma melhor interpretação dos dados proporcionados. Indique o número da pergunta respectiva, por favor.

O questionário terminou. MUITÍSSIMO obrigado pela sua colaboração. **Faça "Guardar" para guardar as suas respostas e envie o ficheiro preenchido.**

Appendix 3.2 – List of variables and Sample description

Variable	Item	<i>IBM</i>		<i>INAMOL</i>		<i>PLASDAN</i>		<i>CSA</i>	
		Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
v1.1	Do you have the possibility of moving ahead in your organization and remaining in your organization?	2.84	1.138	2.32	1.121	2.67	0.724	2.75	1.330
v1.2	Is it difficult to keep your current pay or to attain pay increases?	2.50	1.133	3.47	1.186	3.21	1.251	2.92	1.394
v1.3	Do you have current freedom to schedule your own work in a manner you see fit?	2.11	0.773	4.00	1.025	4.36	0.842	3.02	1.630
v1.4	Do you believe you can lose your job and be moved to a lower level within the organization?	1.66	0.993	2.55	0.946	2.00	1.000	1.88	1.067
v1.5	Do you think your future in this organization is uncertain?	2.23	1.221	3.07	1.023	2.47	0.990	2.29	1.243
v1.6	Do you believe you can lose your job and be fired?	1.63	0.932	2.72	1.075	2.47	0.990	1.93	1.115
v1.7	Do you think it is probable that you will remain in your organization 3 months from now?	1.92	0.981	4.08	1.119	4.07	0.961	3.04	1.801
v1.8	Will you lose your job by being pressured to accept an early retirement?	1.59	1.079	2.02	1.272	1.53	0.915	1.66	1.124
v1.9	Do you have enough power in this organization to control events that affect your job.?	3.11	1.197	2.57	1.126	3.27	1.100	2.80	1.330
v1.10	In this organization, can you prevent negative things from affecting your work situation?	2.58	0.966	3.56	1.180	3.67	0.976	3.04	1.505
V2.1	Would you be very happy to spend the rest of your career with this organization?	3.66	1.080	3.68	1.112	3.67	0.816	3.25	1.523
V2.2	Do you really feel as if this organization's problems are yours?	3.67	0.907	4.05	0.964	3.73	1.033	3.09	1.661
V2.3	Do you feel a sense of belonging to this organization?	3.94	0.881	4.05	1.080	4.29	0.825	3.13	1.730
V2.4	Do you feel emotionally attached to this organization?	3.69	0.925	3.62	1.136	4.07	1.163	3.09	1.687
V2.5	Right now, is staying in this organization a matter of necessity?	3.70	0.889	4.08	1.046	3.87	0.990	3.31	1.528
V2.6	Would too much of your life be disrupted if you decided that you wanted to leave your organization at this time?	3.47	1.145	3.86	1.090	3.47	1.187	3.30	1.419
V2.7	Do you feel that you have too few options to consider leaving your organization?	3.42	1.080	3.62	1.073	2.87	1.187	3.33	1.264
V2.8	Do you feel an obligation to remain with your current employer?	2.76	1.016	3.43	1.064	2.50	1.286	3.11	1.383
V2.9	Even if it were to your advantage, do you feel it would not be right to leave your organization now?	2.92	1.093	3.39	1.114	2.47	1.356	3.17	1.376
V2.10	Would you not leave your organization right now because you have a sense of obligation to the people in it?	2.73	1.057	2.88	1.263	2.47	1.356	3.14	1.371
v3.1	Do you search out new technologies, processes, techniques and/or product ideas?	3.73	0.937	3.88	1.141	3.67	1.633	3.91	1.321
v3.2	Do you generate creative ideas?	4.21	0.637	4.36	0.961	4.60	0.737	4.55	0.806
v3.3	Do you read magazines, journals, attend courses or conferences to learn of new ideas or solutions?	3.88	0.952	3.13	1.455	3.33	1.291	3.74	1.364
v3.4	Do you generate ideas or solutions to solve problems or difficult situations?	4.03	0.731	3.81	1.306	4.00	1.195	4.34	0.959
v3.5	Do you present new ideas and solutions?	3.99	0.794	3.78	1.190	3.93	1.223	4.18	1.096
v3.6	Do you present improvement initiatives?	3.97	0.741	4.13	1.049	4.00	1.195	4.37	0.957
v3.7	Do you try to persuade the others of the importance of a new idea or solution?	3.86	0.800	3.67	1.145	3.87	1.356	4.14	1.135
v3.8	Do you promote the ideas and solutions so they have a greater possibility of being implemented?	3.94	0.719	3.68	1.121	3.53	1.356	3.98	1.149
v3.9	Do you experiment with the new ideas or solutions?	4.06	0.767	3.95	1.115	3.93	1.100	4.23	0.940
v3.10	Are you conscientious of the bugs of new solutions before they are applied to new products, processes, technologies or markets?	3.79	4.111	3.74	1.133	3.80	1.265	4.10	1.020
v3.11	Do you help your colleagues in their new ideas and solutions?	3.97	0.643	3.86	1.090	3.87	1.187	4.35	0.917
v3.12	Do you like to do things in a new way?	4.07	2.984	4.18	0.928	3.80	1.320	4.26	1.062
v3.13	Do you test the new ideas or solutions?	4.01	0.745	4.22	1.010	3.60	1.404	4.36	0.879

Appendix 3.3 - Structural model (standardized estimates)



Appendix 3.4 – Bootstrap Simulations

Structural Impacts	ML estimation	SE	BOOTSTRAP SIMULATIONS (RANDOM SAMPLES)*												Bootstraps' Means*							
			50				100				200				500				Mean	SE	t	p
			Mean	SE	t	p	Mean	SE	t	p	Mean	SE	t	p	Mean	SE	t	p				
LC <--- INS	0,951	0,212	0,991	0,416	1,28	0,20	0,960	0,367	0,32	0,75	0,996	0,385	1,532	0,13	1,033	0,424	2,59	0,01	0,995	0,398	1,46	0,15
IB <--- LC	-0,469	0,231	-0,61	0,829	-2,45	0,01	-0,6	0,69	-2,71	0,01	-0,598	0,63	-2,865	0,00	-0,6	0,584	-3,53	0,00	-0,607	0,685	-2,85	0,00
IB <--- INS	-0,269	0,147	-0,23	0,425	1,30	0,20	-0,23	0,36	1,39	0,17	-0,23	0,32	1,636	0,10	-0,2	0,288	1,67	0,10	-0,232	0,347	1,48	0,14

• Non-Standardized values used

