Helena Susana Afonso Alves

Corporate Governance determinants of voluntary disclosure and its effects on information asymmetry:

an analysis for Iberian Peninsula listed companies.

Dissertation presented to the Faculty of Economics of the University of Coimbra to obtain the degree of Doctor in Management, in the speciality of Finance, supervised by Professor Ana Maria Gomes Rodrigues and Professor Natália Maria Prudêncio Rafael Canadas.

December of 2011

University of Coimbra

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To Miguel and Jorge

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Abstract

The practices of Corporate Governance, in relation to the optimization of the quality of information flows, allow to increase the company transparency and to assist shareholders in their portfolio decisions. One of the main roles of an effective disclosure policy is the reduction of the information asymmetries between managers – *insiders* – and general investors – *outsiders*. The information asymmetry results from the fact that managers have more and much better information, than the general investors, about the present situation and future perspectives of the company. Otherwise, the information asymmetry between administration and new shareholders can affect the investment decisions of the company because of the sub or under evaluation of the shares in the market.

This study analyses the corporate governance determinants of voluntary disclosure and its impact on the reduction of information asymmetry. Our sample consists of Iberian Peninsula listed companies. We employed univariate and multivariate techniques for data analysis to study the direct and indirect relations between corporate governance characteristics, voluntary disclosure and information asymmetry proxies. We built a voluntary disclosure index based on the information firms provided in their annual reports and used the turnover ratio and the bid-ask spread as proxies for the information asymmetry in the market. We examined the association not only between the level of voluntary disclosure and the proxies for information asymmetry, but also their relation with ownership structure, directors' and supervisors' structures, applying the technique of structural equation modelling, path analysis, to test simultaneously for existing

relationships among these variables. We examined whether corporate governance affects the level of information asymmetry in the capital market. We hypothesized that firms with effective corporate governance would be more likely to voluntarily disclose corporate information and that this would be associated with lower levels of information asymmetry.

The results indicate that the main determinants of voluntary disclosure are the variables related with firm size, growth opportunities, organizational performance, board compensation and large shareholder ownership. The results also show that for firms with high levels of disclosure the bid-ask spread is lower. However, in firms with a high ownership concentration investors tend to increase the bid-ask spreads and trade less, which, in this case, reduces the liquidity of the stock.

Our results corroborate some of the main theoretical foundations so far available concerning the relationship between corporate governance and voluntary disclosure, as well as the relationship between voluntary disclosure and information asymmetry. In addition, the results from the structural equation model allowed us to understand how the governance rules exert influence on the proxies of information asymmetry in the market. We concluded that the ownership structure exerts a direct influence on information asymmetry and that directors' and supervisors' structures exert an indirect influence, through the organizational performance and the voluntary disclosure of information.

Keywords: corporate governance, voluntary disclosure, information asymmetry, Iberian Peninsula listed companies.

Resumo

As práticas de Governo das Sociedades, ao nível da otimização da qualidade e do fluxo de informação, permitem aumentar a transparência das sociedades e auxiliar o acionista no processo de tomada de decisão de investimento. Um dos principais papéis de uma correta política de divulgação é a diminuição das assimetrias de informação entre os gestores - *insiders* - e os investidores em geral - *outsiders*. A assimetria de informação resulta do facto dos gestores possuírem mais e melhor informação do que a generalidade dos investidores no que se refere à situação presente e às perspetivas futuras da organização. Por outro lado, a assimetria de informação entre administradores e novos acionistas pode afetar as decisões de investimento das empresas devido à sub ou sobreavaliação das ações no mercado.

Este estudo analisa os determinantes da divulgação voluntária, no que respeita ao governo das sociedades, e o seu impacto na redução da assimetria de informação. A nossa amostra consiste em sociedades da Península Ibérica cotadas na bolsa. Utilizámos técnicas univariadas e multivariadas de análise de dados de forma a estudar as relações diretas e indiretas entre as características do governo das sociedades, a divulgação voluntária e as *proxies* de assimetria de informação. Construímos um índice de divulgação voluntária baseado na informação disponibilizada pelas sociedades nos seus relatórios e contas anuais e utilizámos o *turnover ratio* e o *bid-ask spread* como *proxies* da assimetria de informação no mercado. Examinámos a associação não só entre o nível de divulgação voluntária e as *proxies* da assimetria de informação, mas também a sua relação com a estrutura de propriedade, de direção e de supervisão, aplicando a técnica dos modelos de equações estruturais para testar de forma simultânea a existência de relações entre as variáveis. Examinámos de que forma os mecanismos do governo das sociedades afetam o nível de assimetria de informação. Definimos

como hipóteses que as empresas com um efetivo governo das sociedades tenderiam a divulgar mais informação de forma voluntária e que esta estaria associada a níveis mais baixos de assimetria de informação.

Os resultados indicam que os principais determinantes da divulgação voluntária são as variáveis relacionadas com o tamanho da empresa, oportunidades de crescimento, *performance* organizacional, compensação dos órgãos de gestão e a existência de um grande accionista. Os resultados também mostram que para empresas com elevados níveis de divulgação o *bid-ask spread* é menor. No entanto, para empresas com elevados níveis de concentração de propriedade os investidores tendem a aumentar o *bid-ask spread* e a transacionar menos esse título, o que reduz a sua liquidez no mercado.

Os nossos resultados corroboram alguns dos principais fundamentos teóricos até agora disponíveis no que diz respeito à relação entre o governo das sociedades e a divulgação voluntária, assim como a relação entre a divulgação voluntária e a assimetria de informação. Para além disso, os resultados obtidos através da aplicação do modelo de equações estruturais permitiram-nos compreender como as regras de governo exercem influência nas *proxies* da assimetria de informação no mercado. Concluímos que a estrutura de propriedade exerce uma influência direta na assimetria de informação e que as estruturas de direção e supervisão exercem uma influência indireta, através da *performance* organizacional e da divulgação voluntária de informação.

Palavras-chave: governo das sociedades, divulgação voluntária, assimetria de informação, sociedades cotadas da Península Ibérica.

Table of Contents

Abstract vii
Resumo ix
Table of Contents xi
List of Figures xvi
List of Tables xvii
List of Abbreviations xix

Chapter 1 – Introduction 1

1.1 Study subject 1
1.2 Work objectives 9
1.3 Work organization 18

Chapter 2 – Theoretical background 21

2.1 Introduction 21
2.2 The attributes and institutions of corporate governance 22
2.2.1 Concept of corporate governance 22
2.2.2 Corporate governance attributes 26
2.2.3 The agency problem 30
2.2.3.1 External and internal mechanisms for controlling agency costs 34
2.2.3.1.1 External mechanisms 36
2.2.3.1.1.1 Hostile takeovers 36
2.2.3.1.1.2 Legal protection 37
2.2.3.1.1.3 Product-market and labour-market competition 38
2.2.3.1.2 Internal mechanisms 40
2.2.3.1.2.1 The board of directors 40
2.2.3.1.2.2 Large shareholders 42
2.2.3.1.2.3 Insider ownership and compensations 44
2.2.3.1.2.4 Debt policy and dividend policy 45

2.2.3.1.2.5 Disclosure policy 48
2.3 The corporate disclosure policy 50
2.3.1 The corporate reporting 50
2.3.2 Objectives of corporate reporting 54
2.3.2.1 Management accountability 55
2.3.2.2 Communicating useful information 56
2.3.2.3 Uses for corporate reports 59
2.3.3 The voluntary disclosure of information 62
2.3.3.1 Theories supporting voluntary disclosure of information 65
2.3.3.1.1 Agency theory 65
2.3.3.1.2 Signalling theory 67
2.3.3.1.3 Legitimacy theory 68
2.3.3.1.4 Stakeholder theory 70
2.3.3.1.5 Positive theory of accounting 72
2.3.3.2 Capital market reasons for voluntary disclosure 74
2.3.3.2.1 Capital market transactions 75
2.3.3.2.2 Corporate control contest 76
2.3.3.2.3 Stock compensation 77
2.3.3.2.4 Litigation costs 78
2.3.3.2.5 Management talent signalling 79
2.3.3.2.6 Proprietary costs 79
2.3.3.3 The economic consequences of voluntary disclosure 81
2.3.3.3.1 Benefits of corporate disclosures 82
2.3.3.3.2 Costs of corporate disclosures 86
2.3.3.3.3 Externalities of disclosure 88
2.3.3.4 Measures of voluntary disclosure 90
2.3.3.4.1 Subjective ratings 91
2.3.3.4.2 Disclosure indices 92
2.3.3.4.3 Other measures 96
2.4 The relation between governance rules, voluntary disclosure and information asymmetry in the market 97
2.4.1 Information asymmetry 98

2.4.2 Corporate governance and voluntary disclosure 101
2.4.3 Corporate governance and information asymmetry 113
2.4.4 Disclosure quality and information asymmetry 117
2.4.5 Measures of information asymmetry 120
2.4.5.1 The bid-ask spread and trading volume 120
2.4.5.2 Other measures used as proxies of information asymmetry 122
2.5 The development of governance and disclosure rules: the cases of Portugal and Spain 125
2.5.1 The corporate governance codes 125
2.5.2 International Financial Reporting Standards 133
2.5.3 Corporate Governance recommendations 135
2.6 Conclusion 139

Chapter 3 - Research model 143

3.1 Introduction 143
3.2 Research hypotheses 144
3.2.1 The corporate governance determinants of voluntary disclosure 144
3.2.1.1 Relation between ownership structure and voluntary disclosure 146
3.2.1.2 Relation between directors' and supervisors' structures and voluntary disclosure 149
3.2.1.3 Relation between corporate characteristics and voluntary disclosure 157
3.2.2 The direct and indirect relation between corporate governance rules and information asymmetry 163
3.2.2.1 Directors' and supervisors' structures 166
3.2.2.2 Ownership structure 167
3.2.2.3 Organizational performance 169
3.2.2.4 Voluntary disclosure 170
3.3 Conclusion 174

Chapter 4 –Research method 175

4.1 Introduction 175
4.2 Sample 175
4.3 Data analysis 177
4.3.1 Main aspects of SEM 178
4.3.1.1 The measurement model and the structural model 180
4.3.1.2 Mathematical formulation of the path diagram 182
4.3.1.3 Aspects that affect the estimation of SEM 185
4.4 Variables definition 190
4.4.1 The construction of a voluntary disclosure index for our study 190
4.4.2 Corporate governance characteristics and control variables 202
4.4.3 Proxies for information asymmetry 206
4.5 Descriptive statistics 208
4.5.1 Variables that characterize the ownership structure, directors' and supervisors' structures and the corporate characteristics 208
4.5.2 Disclosure variables 212
4.5.2.1 The voluntary disclosure index results 212
4.5.2.2 Description of the results of the six categories of voluntary disclosure 215
4.5.2.3 Assessment of validity of the voluntary disclosure index 221
4.6 Descriptive statistics for Portugal and Spain 225
4.7 Conclusion 229

Chapter 5 - Analysis and Results 231

5.1 Introduction 231
5.2 Pearson's and Spearman's correlations 232
5.3 Multiple regression analysis 241
5.3.1 Dependent variable: total voluntary disclosure index 241
5.3.1.1 Model 1 242
5.3.1.2 Model 2 246
5.3.1.3 Model 3 249
5.3.1.4 Checking the assumptions of Multiple Regression 255

5.3.2 Dependent variable: category of voluntary disclosure index 260
5.4 Structural Equation Model 264
5.4.1 Development of the proposed structural equation model 264
5.4.1.1 Stage 1 - Developing a theoretically based model 265
5.4.1.2 Stage 2 - Constructing a path diagram of causal relationships 266
5.4.1.3 Stage 3 - Converting the path diagram into a set of structural and measurement models 267
5.4.1.4 Stage 4 – Analysis of aspects that affect the estimation of SEM 274
5.4.1.5 Stage 5 - Assessing the identification of the structural model 276
5.4.1.6 Stage 6 - Evaluating the estimation results 278
5.4.1.7 Stage 7 – Model respecification and interpretation of the results 290
5.4.1.8 Decomposition of structural effects for the proxies of information asymmetry: direct, indirect and total effects 299
5.4.2 Development of the proposed model using each category of voluntary disclosure separately 302
5.5 Conclusion 311

Chapter 6 - Conclusions 313

References 329
Appendixes 359
Appendix 1 360
Appendix 2 363
Appendix 3 364
Appendix 4 365
Appendix 5 367
Appendix 6 370
Appendix 7 376
Appendix 8 377
Appendix 9 378
Appendix 10 379

List of Figures

Figure 2.1	Corporate reporting environment…….....	61
Figure 3.1	Path graphic of the proposed model……	165
Figure 4.1	Economic sector distribution……...……	212
Figure 4.2	Strategy category…….	216
Figure 4.3	Market and competition category……	217
Figure 4.4	Management and production category……	218
Figure 4.5	Future perspective category……	219
Figure 4.6	Marketing category…….	220
Figure 4.7	Human capital category……..	221
Figure 5.1	Normal probability plot for the global model…….	257
Figure 5.2	Scatterplot of the global model……...	258
Figure 5.3	Schematic representation of the proposed model……	273
Figure 5.4	Path graphic of the final model……...	294

List of Tables

Table 2.1	Corporate Governance definitions……..	24
Table 2.2	Management accountabilities……..	55
Table 2.3	Fundamental qualitative characteristics……..	57
Table 2.4	Enhancing qualitative characteristics……..	58
Table 2.5	Uses for corporate reports……...	60
Table 2.6	Categories used to build voluntary disclosure indices……	95
Table 2.7	Recent studies about the relation between corporate governance and voluntary disclosure….....	110
Table 2.8	Main aspects of Spanish unified corporate governance code…….	136
Table 2.9	Main aspects of Portuguese CMVM recommendations……..	137
Table 3.1	Summary of the first group of hypotheses…….....	162
Table 3.2	Summary of the second group of hypotheses……..	173
Table 4.1	Items of voluntary disclosure……..	199
Table 4.2	Variables that characterize the ownership structure and the directors' and supervisors' structures…….	204
Table 4.3	Continuous variables……...	209
Table 4.4	Dichotomous variables……	211
Table 4.5	Disclosure variables……	213
Table 4.6	Correlations with analysts, with Pearson (Spearman) correlations below (above) the diagonal…….	223
Table 4.7	Descriptive statistics for Portugal and Spain……...	226
Table 5.1	Pearson's correlation…….....	233

Table 5.2	Spearman's correlation…….……...	238
Table 5.3	Regression results – model 1……...	243
Table 5.4	Regression results – model 2……...	247
Table 5.5	Regression results – model 3……...	251
Table 5.6	Summary of the results for the first group of hypotheses……...	254
Table 5.7	Residuals statistics……..	258
Table 5.8	Regression results using each category of voluntary disclosure.	262
Table 5.9	Indicators for each construct included in the structural equation model.....	268
Table 5.10	Skewness and Kurtosis……	275
Table 5.11	Goodness of fit tests - initial model…….…...	279
Table 5.12	Standardized estimation of the measurement model coefficients - initial model……...	283
Table 5.13	Constructs' reliability and variance extracted…….	286
Table 5.14	Correlation matrix between constructs…….…...	287
Table 5.15	Standardized estimation of the initial structural model coefficients……..	289
Table 5.16	Goodness of fit tests - final model…….….	292
Table 5.17	Standardized estimation of the final structural model coefficients……..	295
Table 5.18	Summary of the results for the second group of hypotheses…...	298
Table 5.19	Structural effect decomposition……..	301
Table 5.20	Standardized estimation of the final six structural models coefficients…….....	303
Table 5.21	Structural effect decomposition of the six final models……..	308

List of Abbreviations

AICPA - American Institute of Certified Public Accountants

AIRM - Association of Investment Management and Research

CEO – Chief Executive Officer

CICA - Canadian Institute of Chatered Accountants

CMVM - Portuguese Securities Market Commission

CNC - Portuguese Accounting Standards Board

CNMV - Spanish Securities Market Commission

EC - European Commission

FAF - Financial Analysts Federation

FASB - Financial Accounting Standards Board

GAAP - Generally Accepted Accounting Principles

GRI - Global Reporting Initiative

IAS - International Accounting Standards

IASB - International Accounting Standards Board

IASC - International Accounting Standards Committee

ICAEW - The Institute of Chartered Accountants in England and Wales

IFRS - International Financial Reporting Standards

IOSCO - International Organization of Securities Commissions

MC - Management Commentary

MD&A - Management Discussion and Analysis

NRM's - New Reporting Models for Business

OECD - Organization for Economic Co-operation and Development

OFR - Operating and Financial Review

POC - Portuguese Accounting Plan

PwC - PricewaterhouseCoopers

SEC - Securities and Exchange Commission

SEM - Structural Equation Model

SNC – Portuguese Accounting Standards System

Chapter 1 – Introduction

1.1 Study subject

The expression *corporate governance* designates the complex set of rules (of various nature), instruments and issues relative to administration and control (or supervision) of companies. According to Abreu (2010) it is a classic theme but a renewed one, with new problems and new proposals, and flagrantly up-to-date. The economic scandals that highlighted the accounting manipulation have damaged investors' trust in both the United States and European financial markets (Méndez and García, 2007). To Câmara *et al*. (2008) the debate on the corporate governance has acquired a notorious strength, namely after a series of traumatic episodes revealed in big listed companies (Enron, Worldcom, Parmalat, among others), which led to a new reflection particularly in juridical and economic literature.

The *corporate governance movement* began in the 70th in the last century in the United States of America. It spread to Europe, through United Kingdom. The reality of these two countries presents, however, important affinities: nearly all big companies are listed (the shares are negotiable on the stock market) and the property of the shares is dispersed (controlling shareholders are rare). It is different from the corporate reality in Continental Europe. There are fewer listed companies and the shareholding property is a lot more concentrated, *i.e.*, there are controlling shareholders in a great majority of the big companies.

Therefore, it would seem that the problems and the solutions for corporate governance in the European continent are different from those of North America. For Abreu (2010) those problems and solutions are not so different, justifying his position. It is true that in the European continent the dominating shareholders actively intervene in the companies' life, but it is also notice the absenteeism on the minority shareholders part (sometimes in great numbers), given the lesser liquidity of the market. Furthermore, it is also true that if there are shareholders that are also managers, the administrators have a lot less power and freedom and may be tempted to act to the benefit of the majority shareholders in detriment to the minority ones and the social interest. Thus, "*some of the measures of corporate governance talked about on the other side of the Atlantic are adopted or adoptable here*" (Abreu, 2010: 17)[1]. In this area the author namely refers to the reinforcement of the administrators' loyalty and responsibility, the role of the non-executive independent administrators as supervisors, the structure of supervision and, within the purpose of this work, the transparency between the company and the market.

In relation to this last point, we must enhance that, in the last years, authorities and market regulators considered corporate governance and disclosure as two inseparable key instruments for investor protection and the functioning of capital markets (Cadbury Committee Report, 1992; Blue Ribbon Report, 1999; OECD, 1999, 2004). In this sense, our purpose is to empirically examine the corporate governance determinants of voluntary disclosure, and its effects on the information asymmetry in the market, considering Iberian Peninsula listed companies.

[1] In this domain the author also underlines that, in spite of the clear signs of convergence in corporate governance, "*it does not seem predictable or predicable to total convergence or uniformity*" (Abreu, 2010: 20). He enhances therefore the weight of the infra structural, cultural and regulatory differences. Furthermore, "*there is not a sole model of good corporate governance*" (OECD, 2004: 13).

Through the 1970s and 1980s the research on corporate governance issues was largely focused on United States corporations. In more recent years, however, we have witnessed an explosion of research on corporate governance around the world, for both developed and emerging markets. According to Méndez and García (2007) in contexts featured by high ownership concentration and board of directors dominated by representatives of controlling shareholders, it is more difficult to extrapolate from studies on the Anglo-Saxon markets. Specific research is therefore needed to take in account these characteristics, which are the norm in many countries (Shleifer and Vishny, 1997).

Portugal and Spain are included in the group of code law countries, specifically in the French family (La Porta *et al.*, 1997). To Meek and Thomas (2004) code law accounting is characterized as oriented toward "legal compliance", with low disclosure, and an alignment between financial and tax accounting. Banks or governments dominate as a source of finance and financial reporting is aimed at creditor protection[2].

In this context, Portugal and Spain institutional setting has in common with other European Continental countries a relatively low number of listed companies, a relatively illiquid capital market and, above all, a high level of concentration in corporate shareholdings. To Denis and McConnell (2003: 29) concentrated ownership can be a "*reasonable response to a lack of investor protection*".

[2] By contrast, the common law accounting is oriented toward "fair presentation", transparency and full disclosure, and a separation between financial and tax accounting. Stock markets dominate as a source of finance and financial reporting is aimed at the information needs of outside investors (Meek and Thomas, 2004: 29). Futhermore, La Porta *et al.* (1997, 1998, 2000) argue that the type of legal system predisposes a country toward its principal system of finance. A common law legal system emphasizes shareholder rights and offers stronger investor protection than a code law legal system. The outcome is that strong equity markets develop in common law countries and weak ones develop in code law countries.

According to Arcay and Vázquez (2005) corporate governance in Spain has relied heavily upon the role played by majority shareholders who were usually involved in the management of the company[3]. Nevertheless, during the 1990s, floating capital[4] started to represent a significant proportion of equity in some listed companies, giving rise to greater concern about corporate governance and the protection of investors' interests.

To Lopes and Rodrigues (2007) Portugal is a country where companies, even listed companies, are family owned and the capital is concentrated in a small number of shareholders. Góis (2007) argue that the constraints present in a continental economy such as the Portuguese one, hinder the practical application of the best rules of good corporate governance to have a positive effect on the quality of financial disclosure presented by these companies. For the author, the Portuguese stock market presents a reduced efficiency level which implies that disclosure practices and transparency are not valued.

In this sense, Portugal and Spain provide a suitable environment to test the existence of interactions among corporate governance, voluntary disclosure and information asymmetry in the market. The uncertainty and the asymmetry of information create problems of conflict of interest, which affect the basic functions of the organizations as well as their potential for the creation of value. Given that the information provided reflects the degree of transparency and accountability of the organization with shareholders, it becomes one of the most important aspects of corporate governance. According to Allegrini and Greco (2011) while large insider shareholders can use the benefits of private control, having

[3] To Leech and Manjón (2002:158), "*the Spanhish system of corporate governance is especially interesting because in Spain ownership concentration is the main control mechanism*".
[4] "*Floating capital* " is the proportion of equity actively traded in the market (Leech and Manjón, 2002:160).

direct access to information, outsider shareholders rely on the monitoring activity of directors and on disclosure.

Several studies provided the framework for linking disclosure to corporate governance. On the corporate governance side, most of the research focuses on ownership structure and board structure (in a broad sense, governance rules). According to Denis and McConnell (2003: 2) "*the internal corporate governance mechanisms of primary interest are the board of directors and the equity ownership structure of the firm*". Managerial ownership (Jensen and Meckling, 1976) and blockholder ownership (Kaplan and Minton, 1994) are two major governance mechanisms that help control agency problems. In addition, Fama (1980) argues that the board of directors is the central internal control mechanism for monitoring managers.

Several studies about the relation between corporate governance and disclosure have been done. These studies showed that the quality of firms' mandatory and voluntary disclosures increase with the quality of firms' corporate governance. In the case of firms' mandatory financial reports, better quality governance is associated with a lower probability of financial statement fraud (*e.g.* Beasley, 1996) and less earning management (*e.g*. Dechow *et al.*, 1996). In the case of firms' voluntary disclosures, better quality governance is associated with a higher overall level of voluntary disclosure (*e.g.* Eng and Mak, 2003; Arcay and Vázquez, 2005; Allegrini and Greco, 2011). Better governance is also associated with both a higher likelihood that management will issue a voluntary forecast of future earnings and, if made, a greater level of precision in such forecasts (*e.g.* Ajinkya *et al*., 2005; Karamanou and Vafeas, 2005).

Most countries demand public disclosure of information about the company, even though most companies usually disclose, in a voluntary way, more information than what is demanded by law and accounting regulations, answering to the demands of the market. In fact, the disclosure of information also helps to increase the public knowledge about the company structures, activities, strategies, performance and aspects related to environmental and ethical issues, as well as its relation with the communities in which its activities are developed. Mandatory disclosure rules ensure equal access to basic information (Lev, 1992), but this information has to be enlarged by firms' voluntary disclosures. There are major market incentives to disclose information voluntarily and managers' attitudes to voluntary disclosure change according to the perceived relationship of the costs and benefits involved (*e.g.* Gray *et al.,* 1990; Healy and Palepu, 1995; Ho and Wong, 2001). Voluntary disclosure and its determinants have been identified as an important research area since the 1970s.

The voluntary disclosure of information is also seen in the literature as motivated by its effects on the capital market perception level of the value of the organizations. Following the arguments of Akerlof (1970), Grossman and Hart (1980), Grossman (1981) and Milgrom (1981), we can state that many organizations are induced by the market to disclose a lot of private information. Following the arguments of Wan (2009: 14), when investors enter the capital market, their investment selection criteria is mostly based on information that is provided by managers. If managers do not disclose all relevant information that reveals firms' value, then investors may have "*biased estimates of value*", and this will result in inappropriate investment choices. Beside that, investors often do not participate actively in management activities. In this sense, investors' impression of firm

value is based on manager's elucidation, which gives managers the opportunity to employ a "*self-serving behaviour*". According to the author, the above analysis explains the importance of information disclosure as a key element in solving the conflict of interest problem and in protecting shareholder rights.

In this sense, one of the main purposes pointed to corporate disclosures is the reduction of the expectation gap between investors, by decreasing the advantage from which informed investors benefit and, consequently, by reducing information asymmetry in the stock market. The signalling theory suggests that the increase of publicly available information would reduce the production of private information and hence decrease information asymmetry between market participants. Empirical studies have found that both mandated and voluntary disclosures are likely to signal material information to the market which results in lower information asymmetry among informed and uninformed investors (*e.g.* Diamond and Verrecchia, 1991; Healy *et al*., 1999; Leuz and Verrecchia, 2000; How *et al*., 2005; Kanagaretnam *et al*., 2007; Brown and Hillegeist, 2007; Jiang *et al*., 2011). Thus, disclosure is a channel through which existing and potential shareholders obtain valuable information about the firm, being, for that reason, the connection between corporate "insiders" and capital market "outsiders". It is the content of disclosure that reveals not only a firm's financial and operational situation, but also its managers' incentives and intentions to disclose relevant information. Therefore, it reflects the power managers can exert on disclosure decision making.

The information structure of a firm refers to the three categories of information within a firm: that which is subject to mandatory disclosure, that which is voluntarily disclosed, and

that which is undisclosed. According to Holland (1998: 29) companies identify two distinct or extreme areas for corporate disclosure. The first is *"where market failure created a clear-cut domain for private disclosure only"*. The second is *"where regulation created a distinct area for mandatory public disclosure"*. In between these two *"lay a wide area for company discretion concerning public versus private disclosure choices*". As information is distributed through different channels to different receivers, information asymmetry arises among market participants.

So there is a link between corporate governance and information asymmetry through the compound relationships between corporate governance and disclosure, and disclosure and information asymmetry. Since disclosure is the product of management's decisions (Meek *et al*., 1995; Healy and Palepu, 2001) the level of corporate governance determines the firm's information structure, and thus influences the level of information asymmetry between the company and the market.

Previous research about the relation between voluntary disclosure and information asymmetry suggested that voluntary public information can reduce the level of information asymmetry among market participants, and thus can help to form an efficient market. Analytically, Barry and Brown (1985), Diamond (1985), Diamond and Verrecchia (1991) and Kim and Verrecchia (1994) argue that more information generally reduces information risk on prices. Likewise, voluntary disclosure serves to reduce information asymmetry among traders. Empirically, Welker (1995), Healy *et al.* (1999) and Leuz and Verrecchia (2000) investigate links between voluntary disclosure and stock liquidity and argue that companies might follow a disclosure strategy in response to perceived illiquidity of their

shares in the market. Consequently, corporate disclosures aim to improve stock market liquidity. Disclosure literature has also shown that high quality of public disclosures reduce information asymmetry and, as a result, increase stock market liquidity. Some authors, like Welker (1995), Bushee and Noe (2000), Leuz and Verrecchia (2000) and Petersen and Plenborg (2006) argue that information asymmetry could be measured by both trade-based and order-based measures *i.e.* transaction volumes and bid-ask spreads.

In short, and following the previous arguments, we can state that the balance of power between shareholders and management decides how managers follow the corporation's optimal disclosure policy, which determines the level of information asymmetry between informed and uninformed traders of company's shares. The implementation of good corporate governance practices can contribute to the optimization of organizational performance, as well as the stability of markets and the security of investors.

1.2 Work objectives

Investment decisions are linked to corporate governance, and transparent markets, because investors prefer to invest in properly supervised corporations and tend to avoid investing in "*obscure environments*" (Walkner, 2004: 2). According to Esperança *et al.* (2011) good governance practices are essential to give confidence to investors. This confidence, generated by corporate governance mechanisms, which lead to the protection of minority shareholders, promotes the financial market development. Transparent reporting is essential to have effective corporate governance. Corporate disclosure supports investor

confidence by providing information about performance and risk profile of the firm concerned.

The main purpose of this study is to empirically examine the corporate governance determinants of voluntary disclosure and its effects on the information asymmetry, for Iberian Peninsula listed companies. We analysed the information disclosed by Iberian Peninsula non-financial listed companies, concerning the year of 2007. In this sense, we analysed the information disclosed few time after the obligation of following the International Financial Reporting Standards[5] (IFRS) and after a set of amendments on the corporate governance recommendations adopted in both countries.

In line with the European Commission Regulation nº 1606/2002 (European Commission, 2002), since the 1st January 2005, listed companies of Spain and Portugal have been required to prepare consolidated accounts following International Financial Reporting Standards (IFRS) as endorsed by the European Union. This process of harmonization intended to improve the comparability and transparency of the information disclosed and, thus, to contribute for a better functioning of the capital market.

In Spain, the Unified Good Governance Code, applicable from 2007 onwards, provided a common standard for the good governance practices of all listed firms. The article 116 of the Securities Markets Law requires that all companies publish an Annual Corporate Governance Report and disclose it as price sensitive information. This report must

[5] International Financial Reporting Standards (IFRS) are accounting rules issued by the International Accounting Standards Board (IASB). In contrast to local accounting rules that differ across markets and countries, IFRS are a set of uniform rules that apply in the same way to all public companies in markets that adopt the standards. IFRS are principles-based reporting standards that attempt to cover a broad range of economic conditions, transactions, activities or events (Leuz and Wysocki, 2008).

"*provide comprehensive and reasoned information on listed companies' corporate governance structures and practices, enabling investors and other users a founded judgement on the same*" (CNMV, 2008: 15). Spanish legislation leaves it up to each company to decide whether or not to follow the recommendations of the Unified Code, but requires them to give a reasonable explanation for any departure from the same.

In Portugal, the "Recommendation on Corporate Governance", by the securities market regulator - the Securities Market Commission (*Comissão do Mercado de Valores Mobiliários* - CMVM), was implemented also on a comply-or-explain basis in 2001. The country has continued to regularly improve its corporate governance recommendations through a process of bi-annual amendments. In a 2007 update, the recommendations were renamed the "CMVM Code of Corporate Governance".

In our work an important aspect is the definition of "*voluntary disclosure*". To FASB (2001b) the term "voluntary disclosure" describes disclosures, primarily outside the financial statements, that are not explicitly required by accounting regulation. Consistently with prior definitions in different regulatory national environments (Cooke 1989b; Raffournier, 1995; Meek *et al.*, 1995; Depoers, 2000; Allegrini and Greco, 2011), voluntary disclosure is considered the information released to the outside deriving from management's insider knowledge of the company, which are not required to be published in accounting regulated reports. Voluntary disclosure is, therefore, produced by a management's reporting decision (Meek *et al.*, 1995; Healy and Palepu, 2001).

The purpose of the present work is to examine not only the association between the level of voluntary disclosure and the proxies for information asymmetry, but also their multidimensional relation with governance rules. We employed univariate and multivariate techniques for data analysis to study the direct and indirect relations among the variables included in our study.

Previous research used as proxy of the overall level of voluntary disclosure the companies' earnings announcements/earnings forecasts (*e.g.* Coller and Yohn, 1997; Ajinkya *et al.,* 2005; Karamanou and Vafeas, 2005; How *et al*., 2005; Kanagaretnam *et al.*, 2007) or the voluntary disclosure in the annual report (*e.g*. Botosan, 1997; Ho and Wong, 2001; Eng and Mak, 2003; Wang *et al.,* 2008; Allegrini and Greco, 2011). In this study we select the second option. Previous studies (*e.g.* Lang and Lundholm, 1993) showed the existence of a positive correlation between the annual report disclosure level and the amount of disclosure provided via other avenues. Also Botosan (1997) argue that voluntary disclosure in the annual report can provide a good proxy for the overall level of information voluntarily disclosed by companies.

According to Botosan (1997) and Healy and Palepu (2001) disclosure is an abstract concept and cannot be measured precisely. Nevertheless, these researchers contend that a disclosure index is a useful instrument that can be utilised to rank order the level of information disclosed by companies. To analyse the level of voluntary disclosure we built an index through a list of items. Our disclosure index was based on the voluntary information that the companies made available on their reports and annual accounts. The methodology used was the content analysis. This methodology was also used in several

international studies dealing with the same issues, among them the studies developed by Eng and Teo (1999), Eng *et al.* (2001), Linsley and Shrives (2006) and, more recently Allegrini and Greco (2011). Our index included six categories of voluntary disclosure: strategy, market and competition, management and production, marketing, future perspective and human capital and we described a total of 60 items considered within the six categories.

The bid-ask spread is commonly thought to measure information asymmetry explicitly (Leuz and Verrecchia, 2000). The turnover ratio reflects the willingness of some investors to sell shares and others to buy. This willingness to trade shares should be inversely related to the level of information asymmetry (Leuz and Verrecchia, 2000). Our study follow the work of Welker (1995) by investigating the relation between "baseline" spreads (not conditioned on the occurrence of an information release) and firms' general disclosure practices. Following Leuz and Verrecchia (2000) and Petersen and Plenborg (2006) in our study the bid-ask spread and the turnover ratio are assumed to be proxies of information asymmetry.

We started our analysis by studying the correlations between corporate governance characteristics, total voluntary disclosure index and information asymmetry proxies. After that we employed multivariate regression to examine the corporate governance determinants of voluntary disclosure. Prior studies have found that different types of voluntary disclosure will be affected by different types of determining factors (Meek *et al.*, 1995; Lim *et al.*, 2007). In this sense, we studied the corporate governance determinants of voluntary disclosure using, firstly, the total voluntary disclosure index as the dependent

variable and, secondly, we made the same analysis using the six categories of the voluntary disclosure. Since these six categories of voluntary disclosure reveal different aspects of the company, and can be directed to different users, the variables affecting each type of disclosure are expected to differ.

To extend the regression analysis, we used a structural equation model. We selected structural equation models as a statistical methodology because it provides a better model visualization through its graphical modelling interface and the ability to test not only direct relations but also indirect relations between the constructs. We pretend to study the direct and indirect relations between the governance rules and information asymmetry, through the voluntary disclosure of information and organizational performance. The inclusion of organizational performance in the proposed model is explained by the fact that disclosure is a channel through which existing and potential shareholders obtain valuable information about the firm, namely about the company's performance. A higher profitability might induce management to supply more information to illustrate its ability to maximize the shareholder's value (Singhvi and Desai, 1971). In this sense, and according to Healy and Palepu (2001: 431), "*the association between capital market variables and disclosure may be driven by firm performance rather than disclosure per se*". Our model followed the arguments of the authors by considering that "*disclosure changes are unlikely to be random events: they are likely to coincide with changes in firm economics and governance characteristics*".

With the proposed model we want to understand how corporate governance rules affect the level of information asymmetry in the capital market, directly and indirectly. For that we

divided the governance rules in two major constructs: the ownership structure and the directors' and supervisors' structures. We hypothesized that directors' and supervisors' structures can influence the organizational performance and the information disclosed and this, in turn, would affect the level of information asymmetry between management and shareholders. In relation to ownership structure, it is expected to exert an indirect influence on the level of information asymmetry, but some previous research showed us that a direct influence can also be expected (*e.g.* Bolton and Von Thaden, 1998; Helflin and Shaw, 2000; Jiang *et al.* 2011). We also analysed the impact of the different categories of voluntary disclosure on information asymmetry. We used the same structural equation model by modifying the voluntary disclosure construct.

Like stated previously, most publicly traded companies in the United States and the United Kingdom tend to be widely-held, whereas the ownership structure of most continental European companies presents a large and dominant shareholder who exerts considerable control (Faccio and Lang, 2002).

Spain and Portugal have in common a high level of concentration in corporate shareholdings. We want to understand if this characteristic of the Iberian Peninsula companies ownership structure have a significant impact on the adoption of rules of good governance which, in turn, will affect the corporate disclosure. In this sense, we included in the construct "ownership structure" variables that characterize the ownership concentration of the companies under study.

So, in this thesis, we pretend to:

(1) examine the association between the corporate governance rules not only with the level of voluntary disclosure (and its different categories), but also with the proxies of information asymmetry;

(2) analyse the relations between the ownership structure, directors' and supervisors' structures, voluntary disclosure, organizational performance and information asymmetry, applying the technique of structural equation modelling, path analysis, to test simultaneously for existing relationships among these constructs;

(3) analyse the indirect effects of governance rules on information asymmetry, through the voluntary disclosure of information and through the organizational performance.

The importance or potential contributions of the current study are several.

Like stated previously, research in the subject of corporate governance was predominantly based on studies done with countries belonging to the Anglo-Saxon sphere using as a base their financial markets. This thesis is hereby intended to contribute to the study of the impact of the corporate governance rules in the disclosure of information, and hence in the reduction of information asymmetries, in the specific case and reality of the countries of the Iberian Peninsula. Furthermore, most of the prior research in this area has studied the link between corporate governance and disclosure and between disclosure and information

asymmetry. We also pretend to examine the direct link between corporate governance and information asymmetry. One way of viewing the contribution of our study is that it provides the analysis of the relationships between corporate governance, voluntary disclosure and market-determined measures of information asymmetry (*i.e.* bid-ask spread and turnover ratio). In this sense, our work analyse, for the first time, the association between governance rules and information asymmetry, in a set of corporate voluntary disclosure, using Iberian Peninsula listed companies.

By using the methodology of structural equation modelling, we are able to analyse the direct and indirect relations among the variables under study. Furthermore, we analyse the impact of the different voluntary information categories on the information asymmetry proxies. It was unclear how the different categories of voluntary disclosure exert influence on information asymmetry.

Most of the previous research has examined the impact of public disclosure on information asymmetry and market liquidity around well defined information events, such as earnings announcements. According to Kanagaretnam *et al*. (2007: 519) "*studying the relation between corporate governance and changes in information asymmetry in non-announcement periods is also an interesting question for future research*". This study intend to analyse the relation between corporate governance rules, firm's disclosure practices and information asymmetry proxies, not conditioned by the occurrence of an information release.

We also pretend to highlight the importance of corporate disclosures, under concentrated ownership structures, in order to eliminate information asymmetry. We consider that the multiple relations among ownership concentration, voluntary disclosure practices and information asymmetry should be explored for the realities under study. Furthermore, most of the previous research tends to focus on the effect of one single corporate governance attribute. In this study we examine simultaneously several corporate governance mechanisms, assuming that the different mechanisms interact with each other.

We hope that this research contributes to the perception of the disclosure practices adopted by the Iberian Peninsula listed companies. The results of this study may be useful to understand the information voluntarily disclosed by companies, their determining factors and their consequences in terms of impact on information asymmetry and functioning of the market. Furthermore, our findings are expected to provide implications regarding corporate governance monitoring mechanisms. Improving corporate governance mechanisms should reinforce investor confidence in the financial markets at a time when recent corporate scandals have done much to weaken this confidence.

1.3 Work organization

In addition to this introductory chapter, the rest of the thesis is structured in five chapters. The second chapter consists of the theoretical framework of the research subject. It likewise addresses the issue of corporate governance, in particular its concepts and most important attributes. Then it focuses on the agency problem and the several internal and

external mechanisms for controlling agency costs. After that we present the main objectives of corporate reporting, focusing primarily on the literature review of voluntary disclosure of information. Following this, we analyse the previous investigation about the relation between the governance rules, the voluntary disclosure and the information asymmetry in the market. Finally, we summarize the main aspects related with the development of the governance and disclosure rules in Portugal and in Spain.

Chapter 3 presents the proposed research model. We present two groups of research hypotheses to be tested and the reasoning that led to their formulation. The first group of hypotheses presented will aim to study the corporate governance determinants of voluntary disclosure, using the multiple regression methodology. The second group of hypotheses will be tested using the methodology of structural equation models. We intend to study the direct and indirect relations between governance rules and information asymmetry, through the voluntary disclosure of information and the organizational performance,.

In chapter 4 we begin by examining the composition of the sample that will serve as the basis for our study, following the description of the methodology used in our data analysis. We analyse some of the most relevant aspects of the Structural Equation Model (SEM) methodology. After that we discuss the definition of the variables: the construction of the voluntary disclosure index, the variables related with corporate governance, the general corporate characteristics and the proxies for the information asymmetry. We make the presentation and interpretation of the descriptive statistics for all variables. We proceed to an interpretation of the results of applying the voluntary disclosure index and assess the

validity of this measure. In the last point we present, separately, the descriptive statistics for the Portuguese and for the Spanish companies.

In chapter 5 we present and discuss the results of the univariate and multivariate data analysis. We start with the analysis of the results from Pearson's and Spearman's correlations. After that we apply the technique of multiple regression to test the first group of research hypotheses. We use, firstly, the total voluntary disclosure index as the dependent variable and, secondly, we make the same analysis using the six categories of the voluntary disclosure. We also make an evaluation of the models by checking the assumptions of multiple regression. To test the second group of hypotheses we use a structural equation model. We describe the steps of the development of the proposed model. Following this, we present and discuss the results from the second group of research hypotheses and analyse the decomposition of structural effects for the proxies of information asymmetry. Finally, we analyse the impact of the different categories of voluntary disclosure on information asymmetry. We use the same structural equation model by modifying the voluntary disclosure construct.

Finally, in chapter 6 we summarize the findings and the contributions of the study. Limitations are addressed and suggestions are made for future research.

Chapter 2 – Theoretical background

2.1 Introduction

In an attempt to securely and credibly inform the various users of information, including shareholders and (potential) investors, organizations began to observe with special attention the manner in which they are managed and the manner in which they relate with internal and external agents. Also the internationalization of capital markets led to the need for obtaining financial and non-financial information that is useful for decision making. In this sense, and as stated previously, corporate governance and disclosure are two key instruments for investor protection and the functioning of capital markets.

In this context, this chapter intends to make a theoretical framework of the subject under investigation. The first approach begins by addressing the concept of corporate governance and its most important attributes. The second focuses on the agency problem, with a special attention to the major conflict analysed in the context of corporate governance, which is the one between shareholders and managers. The several external and internal mechanisms for controlling the agency costs are also described.

The disclosure policy, as one of the internal mechanisms for controlling the agency costs and also as a mechanism of construction of the public perception of corporate governance quality, is addressed in the following point. We seek to present the main objectives of corporate reporting, focusing primarily on the literature review of the voluntary disclosure

of information. We analyse the main supporting theories, as well as the previous investigation about the capital market reasons and the economic consequences of voluntary disclosure. We also seek to identify the variables that have been used in previous studies as measures of voluntary disclosure.

Following this, we analyse the previous investigation about the relation between the governance rules, the voluntary disclosure and the information asymmetry in the market. In this sense, we address: the relation between corporate governance and voluntary disclosure; the relation between corporate governance and information asymmetry; and the relation between corporate disclosure and information asymmetry. We also describe the main variables used as proxies of the information asymmetry in the market.

Finally, we summarize the main aspects related with the development of the governance and disclosure rules in Portugal and in Spain.

2.2 The attributes and institutions of corporate governance

2.2.1 Concept of corporate governance

The literature provides a wide range of settings for the corporate governance subject. The study has its roots in Berle and Means (with the publication of the book "*The Modern Corporation and the Private Property*" in 1932) and, earlier still, Adam Smith (with the publication of the book "*An Inquiry into the Nature and Causes of the Wealth of Nations*" in 1776).

Following the definition of Blair (1995: 3), corporate governance consists of "*the whole set of legal, cultural, and institutional arrangements that determine what publicly traded corporations can do, who controls them, how that control is exercised, and how the risks and returns from the activities they undertake are allocated*". Basically, it is important to underline that investors in corporations require assurance that their contributions, financial capital, human capital, social capital, will produce a return. Corporate Governance concerns the institutions that make these investments possible, from boards of directors, to legal frameworks and financial markets, to broader cultural understanding about the place of the corporation in society (Davis, 2005). It is, therefore, the "control" of corporations and that is why it is so relevant and vital to businesses.

Corporate governance involves a vast number of distinct economic phenomenons, making the attribution of only one definition impossible. We find several definitions of this concept, but all share, explicitly or implicitly, some common elements. They all refer to the existence of conflicts of interest between insiders and outsiders, with an emphasis on those arising from the separation of ownership and control (Jensen and Meckling, 1976), mostly about the partition of wealth generated by a company. Some Corporate Governance definitions are provided in table 2.1.

Table 2.1 – Corporate Governance definitions

Garvey and Swan (1994: 139)	Assert that "*governance determines how the firm's top decision makers (executives) actually administer such contracts*", viewing the corporation as a nexus of explicit and implicit contracts, in line with Jensen and Meckling (1976).
Hart (1995: 678)	Suggest that "*corporate governance issues arise in an organization whenever two conditions are present. First, there is an agency problem, or conflict of interest, involving members of the organization – these might be owners, managers, workers or consumers. Second, transaction costs are such that this agency problem cannot be dealt with through a contract*". As Fama and Jensen (1983: 304) observed, "*agency problems arise because contracts are not costlessly written and enforced*".
Shleifer and Vishny (1997: 737)	Argue that corporate governance "*deals with the ways in which suppliers of finance to corporations assure themselves of getting a return on their investment*".
John and Senbet (1998: 372)	Argue that "*corporate governance deals with mechanisms by which stakeholders of a corporation exercise control over corporate insiders and management such that their interests are protected*". They include as stakeholders not just shareholders, but also *debtholders* and even non-financial stakeholders such as employees, suppliers, costumers, and other interested parties.
Denis and McConnell (2003: 1-2)	Define corporate governance as "*the set of mechanisms – both institutional and market-based – that induce the self-interested controllers of a company (those that make decisions regarding how the company will be operated) to make decisions that maximize the value of the company to its owners (the suppliers of capital)*".
OECD (2004: 17)	The OECD principles of corporate governance define that "*the corporate governance framework should promote transparent and efficient markets, be consistent with the rule of law and clearly articulate the division of responsibilities among different supervisory, regulatory and enforcement authorities*".
Kanagaretnam *et al.* (2007: 498)	Corporate governance encompasses "*the controls and procedures that exist to ensure that management acts in the interest of shareholders (…) reducing the likelihood that management, acting in its self-interest, takes actions that deviate from maximizing the value of the firm*".

We may add to Hart's conditions the proposition that contracts are always incomplete. In fact there is a consensus regarding the assumption that the corporate governance problem cannot be satisfactorily resolved by complete contracting because of significant uncertainty, information asymmetries and contracting costs in the relationship between capital providers and insiders (Grossman and Hart, 1986; Hart and Moore, 1990; Hart, 1995) or simply because in a world of bounded rationality[6] (Simon, 1959) there is no such thing.

In a wide scope, corporate governance encompasses all the mechanisms that relate to the determination of the will of the company and its implementation, be it in terms of defining the type of economic activities to be developed, be it in regard to the operational organization of these activities, be it in the making of financial decisions and investments, or be it in regard to the return of invested capitals or their remuneration.

The corporate governance mechanisms are incorporated in the control and supervision of the management exercise and aim to ensure that the company is managed effectively. In other words, the administration of every company should contemplate mechanisms that include an efficient allocation/production/development of resources and mechanisms that ensure accountability for how those resources are used.

[6] As Simon (1959, 1982) emphasises in his study the idea of rationality does not have to have correspondance with the concept of optimization/maximization of results. Having a mental process which consumes resources, the optimum choice is the one that produces an efficient combination between the utility produced by the result and the consumption of resources necessary to achieve that result. «B*ounded rationality*», which does not mean an incapacity to reach the best solution through a effort merely cognitive, but above all it means the recognition that it does not always make sense to carry out this effort.

In this sense, if such corporate governance problems exist, these mechanisms are needed to control the resulting conflicts. The precise way in which those monitoring devices are set up and fulfil their role in a particular firm defines the nature and characteristics of that firm's corporate governance.

2.2.2 Corporate governance attributes

Some of the previous studies on corporate governance tend to focus on one attribute of governance as opposed to studying a broad set of governance attributes intended to protect stakeholders' claims to firm' resources (*e.g.* Hermalin and Weisbach, 1991; Sengupta 1998; Bhagat and Black, 2000; Bhojraj and Sengupta, 2003). Ashbaugh-Skaife *et al.* (2006) argue that the limitation of this research is that some governance attributes may complement each other in protecting stakeholders' claims. Standard and Poor's (2002) developed a framework for evaluating corporate governance. Their framework included three main governance components: ownership structure and influence, board and management structure, and financial transparency and information disclosure. In this point we use this taxonomic device to describe the governance attributes.

- **Ownership structure and influence**

Ownership structure and the influence that certain shareholders exert on management play a key role in corporate governance. To Ashbaugh-Skaife *et al.* (2006) governance mechanisms, that monitor management actions and limit their opportunistic behaviour, protect the interests of shareholders and the interests of bondholders as well. The authors

state that, sometimes, the interests of shareholders and bondholders can diverge, namely because shareholders with significant ownership positions can exercise their influence to force management to take more risky investments, where shareholders as a group receive the benefits of successful outcomes but bondholders bear a disproportionate share of the failures. The study by La Porta *et al.* (1998), done in 27 developed countries and focusing on listed companies, shows that firms with majority shareholders are dominant and, in most cases, these shareholders are a family. The concentration of ownership has the great advantage of allowing for the majority shareholder to have sufficient power to control the management and to implement the necessary changes, but it also carries its own agency problems with the possibility of expropriation of the minority shareholders. However, to corporate governance what really matters is the ability of shareholders to intervene and exercise control over the management if necessary.

- **Board and management structure**

According to Ashbaugh-Skaife *et al.* (2006) the board structure, as a component of corporate governance, deals with such thing as:

(1) board size and composition;

(2) board leadership and committee structure;

(3) competency of the board members;

(4) the number of outside independent directors on the board, to represent the interests of all stakeholders; and

(5) the compensation of the board members.

The first three elements address the board's role and ability to provide independent supervision of management performance. Boards often delegate supervision of key functions or decision making to standing committees – audit, remuneration, nominating or governance, finance and investment. In relation to the fourth element, Bhojraj and Sengupta (2003) argue that firms with a greater proportion of outside directors on the board provide better monitoring of management actions. According to Eng and Mak (2003: 327) "*the role of the board of directors is to monitor management decisions*". In this sense, having a higher proportion of outside non-executive directors on the board would result in better monitoring of the activities by the board and limit managerial opportunism (Fama, 1980; Fama and Jensen, 1983). Outside directors who are less aligned to management may be more inclined to encourage firms to disclose more information to outside investors. Forker (1992) finds that a higher percentage of independent members on boards enhanced the monitoring of financial information and reduced the benefits of withholding information. The fifth element, board compensation, is another element to be considered. Key issues are whether board members are remunerated and motivated in ways that ensure the long-term success of the company. To Jensen (1993) boards with greater ownership in the firm are more likely to do a better job of monitoring management and fulfilling their fiduciary responsibilities.

- **Financial transparency and information disclosure**

The corporate information is communicated through several ways to the market. The market participants interpret the information and use it in their investment decisions. Firms that generate a large quantity of relevant and credible information should facilitate the

participants to form more precise evaluations. These firms are considered transparent. In opposition, firms with vague or imprecise information will inhibit the correct evaluation by investors. These firms are considered opaque (Ang and Ciccone, 2000).

The overall level of transparency is probably a function of several components, like ownership structure and firm specific characteristics (Ang and Ciccone, 2000). Accounting disclosure standards, as mentioned by Lowenstein (1996), are only one possible means of achieving transparency. To Ang and Ciccone (2000) corporate governance mechanisms induce the company to disclose information to the market but, despite that, important information may still be possessed by management. This information is often defined as *asymmetric information* and is often directly related to the company's future performance. According to the authors, management directly controls the amount of information they disclose, the truthfulness of the information, and the communication channel, but information quality may also be influenced by the precision of the communication channel and the firm's previous disclosure reputation. Despite this, it seams consensual that transparent disclosure is a critical instrument to reduce the information asymmetry between the company and the market. In this sense, a greater disclosure transparency facilitates the monitoring of managements' actions and makes it less probable that management will act opportunistically. Therefore, the perception market participants depend on "*both the willingness and ability of managers to reveal their superior information*" (Ang and Ciccone, 2000:5).

As a concluding remark, in what concerns the described attributes of governance, we recall Hart's conditions (Hart, 1995) stating that these attributes/"*institutions*" are only ways of

dealing with an agency problem in a bounded rationality and incomplete contracts setting as follow. This agency problem is described below.

2.2.3 The agency problem

Hart (1995: 678) states that "*corporate governance issues arise in an organization whenever (…) there is an agency problem* (…)". An agency problem arises within a firm whenever managers have incentives to pursue their own interest at shareholder expense (Agrawal and Knoeber, 1996). So, there are agency costs.

Basically, Hart (1995: 678) explains why corporate governance does not matter in the absence of agency costs. He states that *in the absence of agency problems," all individuals associated with an organization can be instructed to maximise profit or net market value or to minimise costs (…). Also no governance structure is required to resolve disagreements, since there are none*".

Let us concentrate on the major conflict analysed in the context of corporate governance that is the one between shareholders and managers. This conflict was the main issue of the theoretical analysis of the agency problem. In fact the agency problem is an essential element of the so-called contractual view of the firm, developed by Coase (1937), Jensen and Meckling (1976) and Fama and Jensen (1983).

The theoretical motives for agency problems are analysed by Jensen and Meckling (1976: 9), who developed a theory of the ownership structure of a firm. The basis for their

analysis is the perspective that a corporation is "*a legal fiction which serves as a nexus for contracting relationships and which is also characterised by the existence of divisible residual claims on the assets and cash-flows of the organization which can generally be sold without the permission of the other contracting individuals*". In this sense, the particular focus of the Jensen and Meckling (1976) model is the contract of an agency relationship between a principal (the external owner of the firm) and an agent (the owner-manager or entrepreneur). They demonstrate that, as the owner-manager's fraction of the equity falls (as more equity is sold to outside investors), the agent has the incentive to appropriate a large amount of the corporations' resources and to exert less than full effort to create value for shareholders. The principal can limit the effects of this divergence of interests by incurring monitoring costs to restrain the agent's self-serving behaviour. Monitoring expenditures potentially include those related to payments to auditors to inspect the company's accounts, costs of providing information to financial analysts, rating agencies or independent directors on the board.

The difference of interests between the principal intervenient and the agent creates some problems, among which, the "*adverse selection*" and "*moral hazard*". The problem of "*adverse selection*"[7] (Akerlof, 1970) arises when one party of the relationship has information that reveals in a selective manner for their benefit and in detriment of the other party. So, by hiding part of the information possessed one deliberately harms the interests of another party. Managers have inside information about the position of their businesses

[7] Akerlof (1970) identifies and analyses the problem of asymmetric information in the context of used cars, in which the sellers (agents) know better than the buyers (principal) the quality of the cars they sell. The consequence is that sellers have the advantage in terms of information on the buyers, and they may sell low-quality cars at the same price as high-quality cars, as long as the buyers can not distinguish the good car from the bad.

and have an interest in disclosing such information when they realize that their company is not having a proper valuation in the markets. The problem of "*moral hazard*" appears when the principal and the agent have different objectives. The principal cannot easily determine if the information and the actions of the agents pursue his goals, or instead, respond only to self-interest. In fact, according to Jensen and Meckling (1976), if both relationship parties have the same objective to maximize its utility, there are good reasons to believe that the agent did not always act in the interests of the principal. The fact that there is some freedom allowing for the choice by the manager, may lead to procedures that fit more to their personal interests, being this usually called moral hazard.

A further problem is associated with the managers having a different horizon than shareholders. In fact, while firms have an indefinite life, the manager's horizon is usually limited to the cash-flows received during the employment relation. This problem is naturally aggravated as managers approach retirement. This can lead managers to have a short-term perspective on investments, with a preference for projects with faster cash-flow returns.

An additional source of conflict between agents and principals is related to different risk preferences. Shareholders eliminate unsystematic risk by diversifying their portfolios so they are not concerned with company-specific risk but only with market risk. In contrast, managers are typically not well diversified as a large portion of their wealth is tied in their company's fortunes. This is not just because of direct cash-flows received from the firm but also because their future employment prospects are dependent on the survival of the firm (Farinha, 2003).

Another problem associated to agency costs is the dispersion of capital which is common to most large listed firms. With a large dispersion of capital, individual external shareholders have no incentive to engage in managerial monitoring. According to Farinha (2003) although it may be in the interests of the collective group of external owners to employ in actions aimed at disciplining management, no single rational individual shareholder will undertake such actions.

Also the free cash flow theory, proposed by Jensen (1986: 323), considers preponderant the conflicts arising from the prevailing theory of agency. The free cash flow is "*cash flow in excess of that required to fund all projects that have positive net present values when discounted at the relevant cost of capital*". When a company generates substantial amounts of free cash flow, conflicts of interest between shareholders and managers arise over the payout policies. These companies run the risk, by the lack of good investment opportunities, to see those funds spent by managers on projects with no added value. The restriction of the problem of free cash flow will depend on the effectiveness of corporate governance mechanisms, meaning on mechanisms that ensure that managers do not apply the funds available in potential organizational inefficiencies.

According to Shleifer and Vishny (1997: 741) the essence of the agency problem also relays on the separation of the management and finance. The manager needs the financiers' funds. The financiers need the manager's specialized human capital to generate returns on their funds. "*But how can financiers be sure that, once they sink their funds, they get anything but a worthless piece of paper back from the managers?*". The agency problem in this context refers to the difficulties financiers have in assuring that their funds are not

expropriated or wasted on unattractive projects. In most general terms, the financiers and the managers sign a contract that specifies what the manager does with the funds, and how the returns are divided. Ideally, they would sign a complete contract that specifies exactly what the manager does and how the profits are allocated. The problem is that most of the future contingencies are hard to describe and foresee, and as a result, complete contracts are technologically infeasible (Shleifer and Vishny, 1997). Because of these problems in designing their contract, the manager and the financier have to allocate residual control rights, the rights to make decisions in circumstances not fully foreseen by the contract (Grossman and Hart, 1986; Hart and Moore, 1990).

In relation to the previous points, the need for mechanisms of decision-making within companies is evident and lacks no additional considerations. Without these mechanisms the companies simply would not work. It is necessary to take decisions and to promote their realization: this is the task of the mechanisms for controlling agency costs. Similarly it becomes apparent how important it is that these mechanisms function effectively, for only in this manner will the business optimally achieve its goals. In this context, companies possess a set of external and internal mechanisms to face the costs associated with the agency problem. These mechanisms are following described.

2.2.3.1 External and internal mechanisms for controlling agency costs

As analysed previously, agency problems arise within a firm whenever managers have incentives to pursue their own interest at shareholder expense (Agrawal and Knoeber, 1996), so there are agency costs. The governance of each company should contemplate the

mechanisms that lead to an efficient allocation/production/development of resources, from the decision point to the accounts rendered.

Several external controlling mechanisms have been addressed in the literature. Due to theoretical and practical limitations, external disciplining devices including hostile takeovers, legal protection, product-market and labour-market competition cannot alone solve the corporate governance problem, although they may be important in some particular circumstances. Firms therefore have to adopt complementary internal disciplining devices in order to minimise their total agency costs. These internal devices include the board of directors, large shareholders, insider ownership and compensations, debt policy, dividend policy and disclosure policy.

These monitoring devices may carry benefits but also carry costs and are not unlimited in their effectiveness at reducing agency costs (Farinha, 2003). In accordance with this, some studies have been recognising the simultaneous nature of many of the corporate governance mechanisms, suggesting that single-handed interventions on a particular mechanism may not be feasible or effective. These external and internal mechanisms are briefly explained in the following points.

2.2.3.1.1 External mechanisms

2.2.3.1.1.1 Hostile takeovers

When managers show low performance, which are not adequate to maximize the profits, external agents can perceive this situation as an opportunity to acquire a company and manage in it in such a way that it produces the profit not yet explored. Thus, following Esperança *et al.* (2011), the threat of external acquisition increases the probability of dismissal of the managers for low performance.

Hart (1995: 684) argues that a hostile takeover is in principle a much more powerful mechanism for disciplining management since "*it allows someone who identifies an underperforming company to obtain a large reward*".

Farinha (2003) states that small shareholders have little incentive to monitor management, but this problem can potentially be avoided by the use of the takeover mechanism. According to this view, if management is inefficient or are not acting in shareholders' interests, a "*raider*" could make a takeover bid, buying the firm at low price, managing it better and eventually selling it back with a profit. An aspect of the takeover mechanism is that it potentially applies in an indiscriminate way to all firms, while the existence of other mechanisms (like debt or dividends) may depend on managers' or shareholders' decisions.

Some authors appoint some problems associated with this mechanism. Grossman and Hart (1980) point out that this mechanism can be undermined if shareholders refuse to sell their shares. Williamson (1970) argues that takeovers involve not just the costs needed to induce

reluctant shareholders but also search costs, bidding costs and other transaction costs that make takeovers in practice a very expensive solution.

Consistent with the view that takeovers are a source of managerial discipline, Martin and McConnel (1991) find evidence of increased management turnover after successful takeovers and more frequent turnover when acquired companies previously underperformed their industry. Shivdasani (1993) shows results consistent with the view that hostile takeovers provide discipline when internal governance mechanisms, such as the board of directors, fail to control management's non value-maximising behaviour.

2.2.3.1.1.2 Legal protection

To Djankov *et al.* (2008) law and regulation are potential barriers to the use of discretional power by managers. Shleifer and Vishny (1997) state that the principal reason for investors to provide external financing to the firm is that they receive control rights in exchange. External financing is a contract between the firm as a legal entity and the financiers, which gives the financiers certain rights to the assets of the firm. If the firm managers violate the terms of the contract, then the financiers have the right to appeal to the courts to enforce their rights. Much of the difference in corporate governance systems around the world arises from the differences in the nature of legal obligations that managers have to the financiers, as well as in the differences in how courts interpret and enforce those obligations. The most important legal right shareholders have is the right to vote on important corporate matters, such as mergers and liquidations, as well as in elections of

board directors. Even if shareholders elect the board, directors don't necessarily represent their interests.

Farinha (2003) describes the legislation that directly affects the efficiency, or cost, of one or more monitoring devices. For example, in the United States many states have passed legislation designed to avoid or increase the costs of hostile takeover. This causes a severe impact on the existence of the takeover device as a general mechanism to control managerial actions within these states. Another example is the existence of legal rules giving a particular importance to dividend policy as a potential instrument for dealing with potential equity agency problems.

Another important area of the legal environment, described by Farinha (2003), which also may influence corporate governance devices, is that concerned with the protection of minority shareholders. La Porta *et al.* (1997) find that the existence and efficiency of legal rules protecting investors are a major determinant of the development of local capital markets. According to the authors, if the extent of the corporate governance problem is possibly a restriction to external capital rising, this can suggest that the quality of the legal system of investor protection is a major determinant on the ability of firms and investors to set up appropriate corporate governance structures.

2.2.3.1.1.3 Product-market and labour-market competition

Hart (1983) presents a formal model where managerial "*slack*" is lower under competition than when the manager's firm is a single non-profit maximising monopolistic firm. This

suggests that the level of competition in product and factor markets may also act as general constraint on the manager's non-wealth maximisation behaviour.

Jensen (1986: 323) states that "*product and factor market disciplinary forces are often weaker in new activities and activities that involve substantial economic rents or quasi rents*"[8]. The author concludes that in these cases alternative monitoring mechanisms would become more relevant. Shleifer and Vishny (1997: 738) recognise that product market competition may be a "*powerful force toward economic efficiency*" but they doubt that its implementation alone can solve the problem of corporate governance.

Fama (1980: 293) argues that "*each manager has a stake in the performance of the managers above and below him and, as a consequence, undertakes some amount of monitoring in both directions*". This is related to the view that the managerial labour market may use the performance of the firm to determine each manager's opportunity wage. The author argues that the existence of a managerial labour market is a key factor influencing the level of mutual monitoring by managers. He sees this market as exercising a direct pressure on the firm to sort and compensate managers according to their performance in order to prevent the best managers from leaving and keep the firm's attractiveness to potentially highly performing managers.

Moreover, for Esperança *et al*. (2011) the labour market is useful to discipline managers. As low performance facilitates the dismissal of managers and gives them a bad reputation on the labour market, which makes it difficult for them to be contracted again for similar

[8] Following Jensen (1986: 323) "*rents are returns in excess of the opportunity cost of the resources to the activity. Quasi rents are returns in excess of the short-run opportunity cost of the resources to the activity*".

positions, reaching a high performance may rise out more appealing opportunity of employment.

2.2.3.1.2 Internal mechanisms

2.2.3.1.2.1 The board of directors

The constitution of the board can also be named as a potential control mechanism. In fact, the composition and leadership of the board are mentioned by several authors as a strong monitoring mechanism of corporate governance. The presence of outside and independent directors to the board gives a greater experience and a greater independence to the management team.

The shareholders choose the board of directors and place them in the top of the organizational hierarchy with the intention of protecting their interests (Esperança *et al.,* 2011). In this sense, shareholders elect the board to act on their behalf and the board in turn monitors top management and ratifies major decisions. The board has a very important role to play but there are some reasons to doubt of its effectiveness in practice.

The board consists of executive directors (who are members of the management team) and nonexecutive directors, who are outsiders. Fama and Jensen (1983) characterise the responsibilities of the board of directors as being both the ratification of management decisions and the monitoring of management performance. This means that the likelihood of managerial collision may be reduced by the presence of outsider directors, who may

thus be regarded as another potential source of corporate monitoring (Winter, 1977; Fama, 1980; Weisbach, 1988).

Outside directors are regarded as professional referees who have the job of overseeing the competition between top managers and are disciplined themselves by an external labour market which judges and prices their services according to their performance as referees. Critics of the efficiency of this monitoring mechanism state that managers naturally dominate the board by choosing outside directors and by providing the information they analyse (Mace, 1986).

Consistent with the importance of outside directors as monitors, Weisbach (1988) documents those CEOs of poorly performing firms are more likely to be replaced if the firm has a majority of outside directors. Rosenstein and Wyatt (1990) report abnormal increases in firm value after the appointment of additional outside directors.

With another point of view, Hart (1995: 682) state that "*if it is hardly reasonable to expect the executive directors to monitor themselves, it is also true that the nonexecutive directors may not do a very good job of monitoring for several reasons:*

- *First, they may not have a significant financial interest;*
- *Second, nonexecutive directors are busy people (they may themselves be chief executives and sit on many boards) and probably have little time to think about the company's affair, or to collect information about the company – over and above that provided by management;*

- *Finally, nonexecutive directors may want to stay in management's good graces, so that they can be re-elected and continue to collect their fees"*.

Empirical research, like the work of Byrd and Hickman (1992), show that the share market response to bidding companies that announce tender offers is more favourable when boards include independent directors. Cotter *et al.* (1997) analyse the role of target firm's independent outside directors during takeover attempts. They found that boards with a majority of independent directors are more likely to use resistance strategies that enhance shareholders' wealth.

2.2.3.1.2.2 Large shareholders

Small shareholders have little incentive to monitor management. In this sense, one possible way to improve corporate governance is to ensure that a company has one or more large shareholders. Hart (1995: 683) argues that, on one hand this idea must be right, since "*if a company has one shareholder that owns 100% of the company there is no longer a separation between ownership and control*". On the other hand, such situation is presumably undesirable for other reasons, "*not least that the gains from going public – the risk reduction benefits from portfolio diversification – are lost*".

Previous research followed the argument that large shareholders can be seen as potential controllers of equity agency problems as their increased shareholding can give them a stronger incentive to monitor firm performance and managerial behaviour (Demsetz, 1983; Demsetz and Lehn, 1985; Shleifer and Vishny, 1986). Another potential benefit relates to

the potential challenge that large shareholders offer to outside raiders, thus increasing the takeover premium (Burkart, 1995).

Jensen (1993) and Shleifer and Vishny (1997) argue that blockholders or institutional investors, that hold large equity positions in a company, are important to a well functioning governance system because they have the financial interest and independence to view firm management and policies in an unbiased way, and they have the voting power to put pressure on management if they observe self-serving behaviour.

But the notion that large shareholders play an important role on reducing the agency costs is not uncontested. Hart (1995: 683) states that "*in the case where a large shareholder owns less than 100% of the company, agency problems may be reduced but they are not eliminated:*

- *First, a large shareholder will still underperform monitoring and intervention activities since he does not receive 100% of the gains.*
- *Second, a large shareholder may use his power to improve his own position at the expense of other shareholders.*
- *Finally, the large shareholder may simply become management; he may run the company himself."*

Also Shleifer and Vishny (1997) observe that large shareholders may have incentives to pursue their own interests at the expense of other outside shareholders. Holmstrom and Tirole (1993) argue that large shareholdings may inhibit the production of information in the market. Furthermore, as suggested by Wymeersch (2002), compliance with the

recommendations of codes of good governance is more difficult when a significant proportion of a firm's equity is held by a majority shareholder.

2.2.3.1.2.3 Insider ownership and compensations

Another important mechanism of governance is the internal property. Increasing the level of managers' stock ownership can be a way to reduce agency costs, because it may permit a better alignment of their interests with the interests of shareholders. Jensen and Meckling (1976) state that, in the extreme case where the manager's share ownership is 100%, equity agency costs are reduced to zero. The argument relies on the fact that, as managerial ownership increases, managers support a large fraction of the costs of shirking, perquisite consumption and other value-destroying actions. Furthermore, larger share ownership by managers reduces the problem of different horizons between shareholders and managers if share prices adjust rapidly to changes in firm's intrinsic value. Also Jensen (1986, 1989) emphasizes the importance of equity ownership by managers to reduce the risk of surplus cash flow. According to the author this participation allows to align the interests of managers and shareholders and ensure proper use of available funds for the purpose of maximizing shareholder wealth.

Beck and Zorn (1982) describe a limitation of this mechanism as a tool for reducing agency costs: managers may not be willing to increase their ownership of the firm because of constrains on their personal wealth. Additionally, personal risk aversion also limits the extension of this monitoring device as the allocation of a large portion of the manager's wealth to a single firm is likely to translate into a badly diversified portfolio.

A different type of monitoring vehicle is related to the potential links between managerial compensation and firm performance. To Jensen and Murphy (1990) a strong relation between compensation and firm performance would allow a better alignment of interest between shareholders and managers. Relevant elements of the compensation package typically include stock related rewards, deferred cash compensation and dividend policy compensation. Also Yermack (2003) finds that director's stock option awards are positively related to firm's investment opportunities and subsequent firm performance. The author shows that "*tying"* director's pay more closely to stock performance through the use of options and other equity awards generally leads to increased performance. To Pereira and Esperança (2009) variable compensation is usually supported by the belief that it is efficient in interest alignment between principals and agents. In public corporations the solution of agency problems lies with the introduction of a variable compensation model, including stock options. In this respect, empirical evidence shows that a stock option plan for outside directors increases the monitoring role played by the board (Perry, 2000) and improves a firm's value (Fich and Shivdasani, 2005). Moreover, a number of studies examined the relationship between stock options and disclosure practices. For example, Miller and Piotroski (2000) and Nagar *et al.* (2003) report a positive association between corporate disclosure and the proportion of CEO compensation affected by stock price.

2.2.3.1.2.4 Debt policy and dividend policy

Some authors claim that another important source of discipline on mangers is provided by corporate financial structure, in particular the company's choice of debt. In this sense, Jensen (1986) states that debt can represent a bonding commitment by the manager to pay

out cash-flows to debtholders, helping to overcome the free cash-flow problem. Also increased debt imposes on management a higher threat of bankruptcy. This threat brings potentially serious consequences for management, as a result of potential loss of reputation or firing, and is therefore likely to encourage efficiency. On the other hand, debt frequently possesses a tax advantage as corporations receive tax deductions from interest payments made to debtholders. Furthermore, according to the *Pecking Order Theory*, there are reduced problems of information asymmetry associates with the act of contract debt, when compared with capital emission (Myers and Majluf, 1984).

Also according to Jensen (1986), the debt discourages managers to make investments of cash-flow in unprofitable projects (those only serving their own interests) and create value for the company, since it demonstrates the willingness of managers to distribute results, as well as being supervised by authorities from outside the company (financial institutions). However, the author points out that the theory that debt creates value for the company and motivates better corporate governance is very weak because the retention of cash-flow is a strong and important source of financing. That is, contracting debt, to address the fact that part of the results obtained by the company are distributed, may generate unnecessary costs and in extreme cases may lead the company to exaggerated levels of debt.

Also Hart (1995: 685) states that if a company takes on debt, then this limits how inefficient management can be, at least if management wants to repay its debt. According to the author, debt serves as a commitment device and "*debt makes it credible, for example, that management will not expand its empire too much by reinvesting profits unwisely*".

Several authors stated that leverage also brings its own agency problems arising from conflicts of interest between shareholders and bondholders. Jensen and Meckling (1976: 51) characterise debt agency costs as consisting of:

- *"the opportunity wealth loss caused by the impact of debt on the investment decisions of the firm;*
- *monitoring and bonding expenditures by debtholders and the firm;*
- *bankruptcy and reorganisation costs*".

According to the authors, debtholders compensate themselves for these agency costs by charging higher interest rates, thus increasing the cost of debt.

To Ashbaugh-Skaife *et al.* (2006) their interests can also diverge because shareholders can force management to take more risky investments, where shareholders receive the benefits of successful outcomes but the bondholders bear a disproportionate share of the failures.

Easterbrook (1984) and Jensen (1986), among others, provide a discussion about the monitoring role of dividends. According to Easterbrook (1984) dividends may control equity agency problems by facilitating capital market monitoring of firm's activities and performance. The reason is that higher dividend payouts increase the likelihood that the firm will have to sell common stock in capital markets. Fluck (1998) and Myers (2000) also present agency-theoretic models of dividend behaviour where managers pay dividends in order to avoid disciplining action by shareholders. Furthermore, La Porta *et al.* (2000) show that companies that are surrounded by a stronger investor protection system tend to

pay higher dividends. More recently, to Esperança *et al.* (2011) the level of dividend payout exerts influence on the reputation of the company in the eyes of the investors.

2.2.3.1.2.5 Disclosure policy

According to Wan (2009: 15) "*the selective disclosure allows managers the opportunity to act in their own interest against the interest of ordinary shareholders, creating the possibility of an agency problem*".

Core (2001) assumes that firms' disclosure policies are determined by the same forces that shape firms' governance structures. The disclosure of information is a potentially important mean for management to communicate firm performance and governance to outside investors. The corporate governance mechanisms can exert control over manager's actions and can help to fulfil the informational demands of stakeholders. In this sense, the investors trust depends on the effectiveness and recognized efficiency of the monitoring and control mechanisms of management.

Companies with more timely and informative disclosures are perceived to have a lower likelihood of withholding value-relevant unfavourable information. As a result, these firms are expected to be charged a lower risk premium by creditors (Sengupta, 1998). But to Klein (2002) the reliability of corporate information is also due, in part, to the quality and integrity of the audit process. She considers that the audit committees more effectively carry out their supervision of the corporate reporting process if they include a strong base of independent outside directors. She provides evidence to support this argument.

Walkner (2004: 14) also recognizes that the following factors constitute barriers to effective disclosure and shareholder oversight:

- the concept of *bounded rationality* recognizes that information is a limited resource, leading to contracts between management and investors that are not only incomplete but also costly to design, to monitor and to enforce;
- the existence of *asymmetric information* relates to the natural informational advantage that management might have over investors, suggesting that actions proposed by management, unknowingly to investors, benefit the management;
- the *opportunistic behaviour* where management encourage the existence of an asymmetric information environment.

Regulators have enforced legislation to ensure that companies provide at least a minimum amount of information. Although, legal requirements do not always satisfy stakeholders demands. In this sense, there is a considerable variation among companies in the disclosure of information that is not legally required. Previous research about the determinants of voluntary disclosure initially focused on corporate characteristics and was based on the basic assumption that corporate disclosure is determined by a trade-off between the costs and benefits associated with it. Recent researches suggest that other factors than cost-benefit analysis may determine the firm's disclosure policy (*e.g.* Arcay and Vázquez, 2005). However, it seams consensual that the companies' disclosure policy is one of the internal mechanisms of construction of the public perception of corporate governance quality and also a way to ensure the efficient functioning of capital markets.

Because this internal mechanism of corporate governance represent a framing part of the problem under study, will be subject to further analysis in the next point.

2.3 The corporate disclosure policy

2.3.1 The corporate reporting

According to the Canadian Institute of Chartered Accountants (CICA, 2008: 1):

"Corporate reporting refers to the process used to communicate with stakeholders[9]*, regardless of the vehicle used for such communications. It reflects the messages that management needs to convey to investors and other stakeholders, taking into consideration generally accepted accounting principles for financial reporting and relevant regulatory requirements".*

In this sense, the corporate reporting model should follow the changes in the type of information needed for the market and, simultaneously, enhance the transparency of corporate governance and accountability. Following Leuz and Wysocki (2008) three recent trends have spurred the debate about financial reporting and disclosure regulations around the world.

- First, international financial crises and corporate scandals often lead to regulation reforms and greater reporting and disclosure requirements.
- Second, stock exchanges and accounting standards bodies from numerous countries around the world have adopted the IFRS to achieve the stated goal of "*harmonization*" and "*convergence*" of accounting rules.

[9] To CICA (2008: 1) stakeholders are *"individuals or groups that may be significantly affected by a company's activities, products and services or whose actions can affect the company's ability to successfully implement its strategies and achieve it objectives"*.

- Third, the increasing internationalization of capital markets emphasizes regulation as a global subject.

So, the corporate reporting has been changing considerably in response to public expectations and to social values. It can take many forms such as a company's annual information form, management discussion and analysis (MD&A), information circular, interim reports, press releases, annual reports, annual financial statements, corporate governance reports, sustainability reports and a variety of electronic disclosures (CICA, 2008). Despite this, the annual report is the traditional form. But companies, investors and other stakeholders are now shifting their focus to the internet. It is becoming the primary medium for communicating corporate information. In fact, we can see in our days an increasing emphasis on timely and continuous disclosure online.

Studies in recent years have focused the investigation on disclosure practices. Nonetheless, researchers recognize the urgent need to develop disclosure metrics that facilitate the research and the evaluation of reporting and its quality. According to Beattie *et al.* (2004) the nature of business has changed. Competitive advantages increasingly involve value creation processes that rely on intangible assets that may not be recognized in financial statements. To serve the information needs of the market and provide the information required for corporate transparency and accountability, there is now a consensus that the business reporting model needs to expand beyond the traditional financial reporting model that emphasises backward-looking, quantified, financial information (*e.g*. Elliott, 1992; AICPA, 1994; Wallman, 1995, 1996, 1997; ICAS, 1999; Lev and Zarowin, 1999; FASB, 2001a; Lev, 2001; ICAEW, 2003; Beattie *et al.*, 2004).

The reporting model has been dominated by financial information. To Beattie *et al.* (2004: 206), even though financial information is crucial, it provides only one part of the picture of overall business performance and has a built-in bias towards recording the short-term results of companies, giving too little emphasis to their long-term value potential. There is need of more targeted information for the future and non-financial in its nature. To the authors that information will be "*soft*" information, meaning "*unquantified or unquantifiable"*. To Espinosa *et al.* (2008) the level of transparency of companies' annual reports has become a central theme of debate in recent years. According to the authors the debate has shifted the focus of attention from the usefulness of accounting numbers to the importance of transparency on issues regarding company life.

The importance of voluntary reporting done by companies has grown dramatically. If previously it was seen as a side report now it's been given the same status of financial reporting, both providing, consequently, the core of the annual report (Beattie *et al.,* 2001). Through the annual report it is possible to answer to the increasing demand for information by all users and the market pressures for additional disclosure. Like stated previously, the disclosure policy is an important instrument of corporate governance, to build an image of the organization and to legitimize their activity. According to IASB (2005: 11) "*if financial statements are not sufficient to meet the objectives of financial reporting, then the IASB should consider requiring the disclosure of other information to help the financial reports meet their objective (…) this will be achieved only if companies provide clear and meaningful information*". Regulators, the academia, consultants, have stated the need for new Business Reporting Models. Take, for example, the British Operating and Financial Review (OFR), Management Commentary (MC) proposal of the International Accounting

Standards Board (IASB) and the multiple New Reporting Models for Business (NRM's) that have been proposed[10]. The general goal of these proposals is to improve quality and transparency of information that is provided to users and, in particular, investors that act in capital markets. These new proposals criticise the traditional model of reporting due to the historic character of the information provided by the financial statements. Like stated previously, there is a need for more forward-looking information, that's not financial in nature. Thus, companies must have a much broader reporting model, addressing issues that are not restricted only to financial aspects, which go far beyond traditional disclosure of financial information.

In this context, it is necessary to mention the importance of the report published by the AICPA (1994), known as "Jenkins Report", which became extremely influential in this regard. This report adopts a "*customer-centric*" approach, meeting the information needs of investors and creditors. It suggests an ample reporting model. The FASB (2001b) state that in the future it expects an increased importance of voluntary disclosure due to the increased rhythm of business change.

In this sense, there are major changes taking place regarding the reporting of companies which will provide important new information to its users: the mandatory adoption of IFRS

[10] The awaresness that the traditional financial reporting is outdated, due to disclosing information based on past events, unable to meet the future information needs of users to support their investiment decisions, led to the emergence in the early 90's of the New Reporting Models for Business (NRM's). However the adoption of these models by businesses has been greatly reduced, either by the ignorance of their existence by companies governing bodies or by the cost of implementing and maintaining what they represent. However, the response to the information needs of investors and other stakeholders is recognized and can be found in the NRM's. This stimulated the interest of regulatory bodies, including the ICAEW (2002, 2003 and 2004), the AICPA (1994), for this reason studies have been produced to reform the current model of financial reporting. Among the NRM's, we highlight a few, such as: Balanced Scorecard, Jenkins Report, Tomorrow's Company, 21st Century Annual Report, The Inevitable Change, Inside Out, Value Dinamics, GRI, The Bookings Institution,Value Reporting TM and Hermes Principles.

in the European Union (EU) and all over the world; the substantial increase in the disclosures relating to Corporate Governance; the Social and Environmental Reporting, such as that proposed by Global Reporting Initiative (GRI); the Operating and Financial Review (OFR) implemented in the UK; the Management Commentary (MC); and the project of harmonization of the conceptual framework by the IASB/FASB, among others.

In fact, as stated previously, an important tendency in disclosure regulation is the increasingly extensive adoption of uniform reporting standards by stock exchanges and accounting standards bodies from different countries. The main goal is to achieve global convergence of reporting regulations. So, in this changing context, the new business reporting models present themselves as a challenge to the harmonization of the structure and content of the information reported by companies, especially at the level of their annual reports.

2.3.2 Objectives of corporate reporting

The primary purpose of corporate reporting is to communicate, in a readily understandable way, timely, reliable and relevant information on a company's past, present and future activities to help users make economic decisions (CICA, 2008). That conclusion was based on an assessment of (i) management accountability, (ii) factors pertaining to the communication of useful information and (iii) uses for corporate report. These three aspects are following described.

2.3.2.1 Management accountability

The responsibility of management to stakeholders is commonly referred to as accountability. The company must determine if a specific group of users has the legitimacy to claim the information it wants. It may be accountable to some user groups as a result of either statutory or contractual relationships. When legitimacy is defined by law, it is enforceable by law and there is no doubt about the question of accountability. Examples of stakeholders whose claims to information are legitimized by law include shareholders and regulators. Certain management accountabilities are presented in table 2.2.

Table 2.2 – Management accountabilities

Financial Statements	Present statements in accordance with *generally accepted accounting principles* (GAAP).
Control Structure	Establish and maintain control structures that will ensure that assets are safeguarded and management policies and procedures are followed.
Compliance	Ensure compliance with applicable laws, regulations, policies and procedures.
Economy and efficiency	Use resources and operate in an economical and efficient manner.
Goal achievement	Attain the specified goals and objectives.
Fraud	Maintain control processes to prevent fraudulent activities.

Adapted from CICA (2008)

Because corporate disclosure is a responsibility of management, management prepares the financial statements and the other information in the corporate report. Clearly, therefore, the information disclosed is a management's representation.

2.3.2.2 Communicating useful information

Over the years, much time and effort has been spent on trying to delineate the qualitative characteristics that are determinants of information usefulness. According to the Conceptual Framework for Financial Reporting of FASB (2010:16) "*the qualitative characteristics of useful financial information identify the types of information that are likely to be most useful to the existing and potential investors, lenders, and other creditors for making decisions about the reporting entity*".

So the first objective is to inform and provide useful information for decision making. Thus, to achieve this objective, the conceptual structure of FASB holds a set of qualitative characteristics of information that make it useful to those who use it. A description of those characteristics, that define and describe the attributes of information that make it useful, is described bellow.

IASC (1989) define the qualitative characteristics as the attributes that make the information provided in financial statements useful to users. The four principal qualitative characteristics were *understandability*, *relevance*, *reliability* and *comparability*. In practice a balancing, or trade-off, between qualitative characteristics was often necessary. More recently, the conceptual framework of FASB (2010), a joint project of FASB/IASB, define as the fundamental qualitative characteristics the *relevance* and *faithful representation* and has enhancing qualitative characteristics the *comparability, verifiability, timeliness,* and *understandability.* The information must be both relevant and faithfully represented if it is to be useful. Neither a faithful representation of an irrelevant phenomenon, nor an

unfaithful representation of a relevant phenomenon, helps users make good decisions (FASB, 2010). Also according to CICA (2008) relevance and faithful representation are fundamental attributes so, at least, a minimal level of each is essential if information is to be useful. Accordingly, both characteristics are the prime determinants of usefulness. The table 2.3 describes the fundamental qualitative characteristics.

Table 2.3 – Fundamental Qualitative Characteristics

Relevance	Relevant financial information is capable of making a difference in the decisions made by users. Information may be capable of making a difference in a decision even if some users choose not to take advantage of it or already are aware of it from other sources. Financial information is capable of making a difference in decisions if it has predictive value, confirmatory value, or both. • **Predictive value:** if it can be used as an input to processes employed by users to predict future outcomes. Financial information need not be a prediction or forecast to have predictive value. Financial information with predictive value is employed by users in making their own predictions. • **Confirmatory value**: if it provides feedback (confirms or changes) about previous evaluations. The predictive value and confirmatory value of financial information are interrelated. Information that has predictive value often also has confirmatory value.
Faithful representation	Financial reports represent economic phenomena in words and numbers. To be useful, financial information not only must represent relevant phenomena, but it also must faithfully represent the phenomena that it purports to represent. To be a perfectly faithful representation, a depiction would have three characteristics. It would be *complete, neutral,* and *free from error*. • **A complete** depiction includes all information necessary for a user to understand the phenomenon being depicted, including all necessary descriptions and explanations. • **A neutral** depiction is without bias in the selection or presentation of financial information. • **Free from error** means there are no errors or omissions in the description of the phenomenon, and the process used to produce the reported information has been selected and applied with no errors in the process.

Adapted from FASB (2010)

According to FASB (2010) the most efficient and effective process for applying the fundamental qualitative characteristics usually would be as follows:

- First, identify an economic phenomenon that has the potential to be useful to users of the reporting entity's financial information;
- Second, identify the type of information about that phenomenon that would be most relevant if it is available and can be faithfully represented;
- Third, determine whether that information is available and can be faithfully represented. If so, the process of satisfying the fundamental qualitative characteristics ends at that point. If not, the process is repeated with the next most relevant type of information.

The enhancing qualitative characteristics also may help to determine which of two ways should be used to describe a phenomenon if both are considered equally relevant and faithfully represented. These characteristics are described in table 2.4.

Table 2.4 – Enhancing Qualitative Characteristics

Comparability	Information about a reporting entity is more useful if it can be compared with similar information about other entities and with similar information about the same entity for another period or another date.
Verifiability	Verifiability helps assure users that information faithfully represents the economic phenomena it purports to represent. Verifiability means that different knowledgeable and independent observers could reach consensus, although not necessarily complete agreement, that a particular depiction is a faithful representation.
Timeliness	Timeliness means having information available to decision makers in time to be capable of influencing their decisions. Generally, the older the information is, the less useful it is.
Understandability	Classifying, characterizing, and presenting information clearly and concisely makes it understandable.

Adapted from FASB (2010)

Enhancing qualitative characteristics should be maximized to the extent possible. However, the enhancing qualitative characteristics, either individually or as a group, cannot make information useful if that information is irrelevant or not faithfully represented. Applying the enhancing qualitative characteristics is an interactive process that does not follow a prescribed order (FASB, 2010).

2.3.2.3 Uses for corporate reports

The annual report offers the most comprehensive representation of the company. Several studies analysed the usefulness of annual reports to shareholders (*e.g.* Beattie *et al*., 2004). Shareholders use annual reports to confirm previously released information used in their decision making. Moreover, because the annual report usually contains the audited financial statements, it may be the only information source to be independently verified. In general, investors find annual reports to be useful, even without the short-term stock market reaction to their releases. Also, annual reports may be an important input to long-term investment decision making, specifically to confirm information that investors have previously received and as a convenient summary to assist risk and return assessments (CICA, 2008).

Corporate reports can be considered from two fundamentally different perspectives – of management and of users. Management may want to disclose certain information whereas users may want different information. The need for, and access to, information is influenced by the users objectives and their particular relationship with the business

involved. The table 2.5 summarizes the uses for corporate reports according to the user perspective.

Table 2.5 – Uses for Corporate Reports

From Management perspective corporate reports intended to:	Provide information for making an informed investment decision; Report on financial position, operating results and cash flows; Report on managers stewardship; Maintain public relations; Meet legal and regulatory requirements; Provide information for an informed shareholder voting decision; Promote a higher price/earnings ratio.
From Investor/Creditor perspective corporate reports are used to:	Asses risk and return; Provide general reference; Provide information for meetings with management; Verify information from other sources; Make performances forecast; Reach current/potential customers; Analyse and track industry sector.

Adapted from CICA (2008)

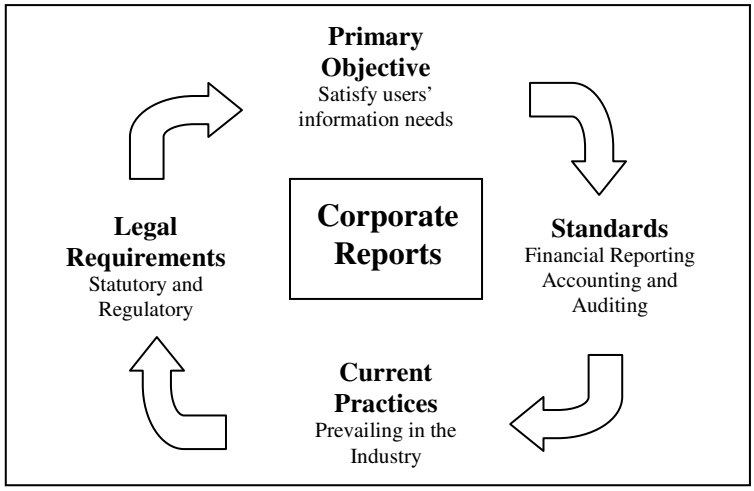
Such differences have a significant impact on the type of information required by each group, and the extent of information that can be made available. To achieve different objectives, users and management need different information for their decision making. Moreover, different classes of users[11] do not always share the same views on risks and uncertainties and may even have conflicting interests. Management's most difficult

[11] According to CICA (2008) the three *primary* groups of users are: shareholders (investors), creditors and analysts/advisers. The *secondary* users are: the public, standard setters, government, regulatory agencies, employees, customers, suppliers, industry groups, labour unions, other companies and academic researchers.

problem, related to corporate disclosure, is the *balancing* the information needs of the different audiences.

Another important aspect is the environment that surrounds corporate reporting. According to CICA (2008) corporate reports are communications documents shaped by management, taking into consideration legal requirements and generally accepted accounting principles. The figure 2.1 describes the corporate reporting environment and the interrelated factors having an impact on the content of corporate reports – financial reporting standards, legal requirements, current practices and the objective of satisfying users' information needs.

Figure 2.1 - Corporate Reporting Environment



Adapted from CICA (2008)

It's generally accepted that financial statements, prepared in general by the companies, meet the common needs of most users. Nevertheless, these do not provide all the necessary information for making decisions. Like stated previously, the "Jenkins Report" (AICPA, 1994) gave the booster step for new ways to report, arguing the necessity for the business report. In this context, there is currently a range of information about companies that

cannot be translated into financial terms, such as information about its contribution to the environment, social welfare, suggesting, in this way, environmental reporting, social reporting, among others. These types of reports occur voluntarily. The voluntary disclosure comes as a way for companies to disclose financial and non-financial information beyond what is required, thus facilitating the understanding of investors about the company and reducing its potential risk. The main aspects about the problematic of the voluntary disclosure of information will be provided in the next point.

2.3.3 The voluntary disclosure of information

Marston and Leow (1998) define the voluntary information as that which is not stipulated by laws and regulations. Also Meek *et al.* (1995: 555) define voluntary disclosure as ''*disclosure in excess of requirements, representing free choices on the part of company managements to provide accounting and other information deemed relevant to the decision needs of users of their annual reports*''. To García and Monterrey (1997) voluntary disclosure is the information revealed voluntarily by companies, *i.e.*, the one that is emitted over the minimum requirements establish by accounting regulation.

Voluntary disclosure is frequently considered as the information released to the outside, deriving from management's insider knowledge of the company, which are not required to be published in accounting regulated reports (Cooke 1989b; Raffournier, 1995; Meek *et al*., 1995; Depoers, 2000; Allegrini and Greco, 2011).

To the Steering Committee Report (FASB, 2001b) the term "voluntary disclosure" describes disclosures, primarily outside the financial statements, that are not explicitly required by accounting regulation. However, it is recognized that many of these "voluntary disclosures" are made to comply with the regulation requirements concerning description of a business and management's discussion and analysis of financial condition and results of operations. To the Securities and Exchange Commission (SEC, 2001) a better approach to improving voluntary disclosure is to create an overall environment that makes it easier and safer for companies to disclose more information beyond the standard financial statements.

There are several incentives for voluntary disclosure. Some incentives are based on the effort of maintaining credibility, reducing investor uncertainty, reducing the cost of capital, making possible an increase in value of securities of the company through public disclosure of information known only by administrators, which may reveal that the company has a higher value than that perceived by the market. Others are based on the desire to maintain a good image and to gain legitimacy (*e.g.* García and Monterrey, 1993). However, there are also disincentives to voluntary disclosure which are, among others, the costs associated with disseminating information. Another disincentive is the inconvenience of disclosing information that may be used by competitors.

Voluntary disclosure has increased substantially in recent years. The need for financing by companies in complex capital markets requires them to provide a wide range of information. Graham *et al.* (2005) focus their study on the economic implications of

financial reporting of companies, noting that voluntary reporting comes as a facilitator of clarity and comprehensibility of the underlying economic reality by investors.

The decision to disclose may be explained by certain characteristics of the company itself, such as size, performance, management practices, among others. Nevertheless, some companies limited themselves to the legal requirements and regulations of the report claiming protection for strategic information, litigation costs and political costs[12].

Voluntary disclosure involves the reporting of various types of information in either annual reports or in other disclosure media. According to Meek *et al*. (1995) financial information have obvious decision relevance to investors. Non-financial information is generally directed more towards a company's social accountability and is aimed at a broader group of stakeholders than just the investors. The information disclosed by companies is used for different reasons by various groups of people namely investors, creditors, financial analysts, regulators, government and non-government agencies.

Voluntary disclosure is seen in the literature as being also motivated by its effects on the perceived value of the company in the capital market. According to Grossman (1981) companies are fully induced by the market to disclose information. Following studies (*e.g*. Verrecchia, 1983; Dye, 1985, 1998) provide a diverse set of configurations that support, partially, some reporting strategies. To Khlifi and Bouri (2010) the most important motive for corporate disclosure is to reduce information asymmetry between corporate management and outside investors, thereby alleviating the agency problem.

[12] Political costs include all expected costs (wealth transfers) imposed on a firm from potential adverse political actions involving antitrust, regulation, government subsidies, taxes, tariffs, among others (Watts and Zimmerman, 1978).

In short, and in general terms, companies voluntarily disclose information in order to meet the information needs of users, and generate competitive advantages with them. Nevertheless, the main reasons that support the voluntary disclosure of information made by companies reside on the explaining theories of disclosure, which shall be referred to further on.

2.3.3.1 Theories supporting voluntary disclosure of information

There are several reasons that lead companies to disclose information in excess of requirements, *i.e.*, there are several motivations for voluntary disclosure. In this context, a number of theories arise that attempt to justify this behaviour by firms.

2.3.3.1.1 Agency theory

As explained previously, the agency theory, initially developed by Jensen and Meckling (1976), is based on the conflict of interest between owners (the principal) and the managers of these (the agent), in situations where there is a separation between the ownership and management or in situations where one person delegates a task to another or the management of certain interests.

As a result of asymmetric information and interests, the principal should have reasons to not trust the agent. In this sense, certain mechanisms are put in place to align the interests of agents with those of the principal, thus reducing the possibility of information

asymmetry, as well as opportunistic behaviours (ICAEW, 2005). Shareholders monitor the actions of managers to make sure that they are acting in a way consistent with achieving their objectives. Such a situation encourages managers to disclose additional information to, thereby, demonstrate to shareholders that they are acting according to their interests. To Khlifi and Bouri (2010), disclosure plays the role of a control mechanism for managers' performance, thanks to which they are likely to disclose more information willingly.

The agency theory assumes the existence of agency costs arising from the contractual relationship between parties. The greater the number of contracts, the greater the cost of the agency to the company. Thus, revealing more information will result in a reduction of agency costs. According to Leventis and Weetman (2000: 5) "*a voluntary disclosure may serve as a way of reducing the adverse effects of "moral hazard" and "adverse selection*". Voluntary disclosure can also strengthen the confidence of external investors in relation to management, reducing equally the costs of the agency.

The importance of agency theory in disclosure, as claimed by Healy and Palepu (2001), deals with the problem of information asymmetry that exists between who disseminates it (the managers acting as agents) and the users of that information (investors and other stakeholders by acting as principals). A key role of the proposed report models that has emerged is to fill in the information asymmetry and to exercise influence on the agents as a mechanism of control of their behaviour by requiring information to be more transparent and accountable. However, it seems that this information asymmetry will always exist due to the conflict of interests between the agent and principal – the maximization of their

individual gains. According to the authors, disclosure only serves to reduce this asymmetry.

2.3.3.1.2 Signalling theory

According to Spence (1973) and Ross (1977) in case of information asymmetry, approached by Akerlof (1970), the signalling theory assumes that firms with higher performance use financial information as a tool to transmit signals to the market.

In a market where there are information asymmetries, managers of higher quality companies are encouraged to transmit to the market the information supplements they possess, thus contributing to the reduction of agency costs and obtaining finance on more favourable terms. However, since the transmission of information implies a cost, managers tend to use signs to communicate to investors the information supplements they have and, thus, causing changes in investors' expectations related to profitability and business risk (Augusto, 2003). Following Levasseur and Quintart (2000) a signal is a message sent by well-informed economic agents (as company directors) to other interveners (as shareholders and creditors) supposedly less informed. But for a sign to be credible, and thus have effects on the intended agents, it must meet three basic conditions: to be issued in advance and verified after the event; have an associated cost; and include incentives and penalties. Ross (1977), assuming a perfect capital market and assuming that economic agents are neutral towards risk, presents a model demonstrating that administrators can use leverage to signal to investors their expectations regarding to future cash flows and, thus, alter the expectations of investors in relation to the company's quality.

So, it is incumbent on directors of companies, knowing they have superior information than the other market players regarding the company they run, the task of transmitting to investors signals than can evidence it. Such signs can be shown by either a good or a bad company. To Marques and Conde (2002), in the case of a good company, the information submitted will try to focus on that fact. On the other hand if it's bad, managers often try to convey the contrary idea, subject to the risks associated with litigation processes that they may subsequently suffer. Also according to these authors, the good companies must report in a meaningful and effective manner the characteristics they possess and which cannot be imitated by bad companies, so that the signal receiver may distinguish them quickly. Morris (1987) developed a study where both the agency theory and the theory of signalling are discussed. The author concludes that given the consistency of the two theories, a combination of both can be used to predict the ways of disseminating information, the choice of accounting policy and the voluntary selection of the auditor. The signalling theory holds that, with regard to the choice of accounting policy, companies with high quality will choose accounting policies that reveal their superior quality, unlike the lower quality companies which will choose methods to camouflage their inferior quality.

2.3.3.1.3 Legitimacy theory

The legitimacy theory is based on the notion of a social contract that exists between the organization and society. Companies operate under the rules and limits of the societies in which they operate. Thus, the companies will have to be sure that its activities are in agreement, or are perceived as being in agreement, with the norms and values of the society, to prevent the disruption of the contract, loosing its legitimacy (Branco e

Rodrigues, 2006). This theory focuses on the recognition of society, *i.e.*, on the adequacy of corporate social behaviour (Nasi *et al.,* 1997). This means that society judges enterprises through the image that companies create of themselves. The only way for companies to survive is "*if the society where they are inserted realize that the company is operating according to a set of values that are beneficial to society*" (Gray *et al*., 1996: 46). Thus, companies can establish their legitimacy by matching their performance with the expectations and perceptions of society itself. Legitimacy problems occur when there is a gap between society's expectations and the perceptions about the social behaviour of the company. Suchman (1995:574) defines legitimacy as "*a generalized perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values beliefs and definitions*".

In fact, the legitimacy theory sees the corporate report as a way to legitimate companies in their behaviours. Thus, any action taken by companies that may endanger the social environment, in which it operates, may cause possible manifestations of discontentment. It's in this context that social responsibility and environmental accounting appear. In recent years we have witnessed a growing awareness of environmental problems, a situation that requires companies to have a greater accountability in this area. So, companies have been developing systems for the prevention and remedying of any environmental damage they might cause. In short, and following Dowling and Pfeiffer (1975), the theory of legitimacy comprises two essential factors. Firstly, the activities developed by companies must be in accordance with social values of the society in which it operates. Secondly, those activities must be submitted to the society through the disclosure made by the company.

2.3.3.1.4 Stakeholder theory

According to Freeman *et al.* (2002) the stakeholder approach has the following characteristics:

- Promote the establishment of a management structure, with strategies flexible enough so that the company does not need to regularly adopt new paradigms;
- Put the objective in the company's survival. To achieve this objective management must be supported by all those who influence or are influenced by the company;
- The various stakeholder groups should share with the company a set of values; and
- Assumes that the successful strategies are those that incorporate the perspectives of all stakeholders.

According to this theory, the main objective of the company is to create value for all stakeholders. Thus, the company can not be understood merely as a socio-economic institution in function of their owners or shareholders who risk their capital in order to obtain profits. Many other factors are in place, a group of people or institutions who are also eager that the organization be successful, the so-called stakeholders[13]. The need for information, that all these persons or institutions demonstrate, drives to new forms of reporting. The stakeholder theory, or as it's also currently known as the stakeholder approach, focus on the company's need to formulate strategies and establish satisfactory arrangements with the various stakeholders to ensure their survival. It begins with the

[13] Freeman (1984: 46) define stakeholders as "*any group or individual who can affect or be affected by the company to achieve its objectives, such as shareholders, employees, customers, suppliers, distributors, competitors and society in general*".

assumption that the company is no longer an isolated entity, that the environment is unstable and surrounded by uncertainties, and that the objectives can not be understood only from the viewpoint of the owners or shareholders.

The stakeholder theory defends the interdependence and integration of agents that compose a system. Seeking through this interrelationship to develop a theoretical regard concerning the social responsibility of the organization to the environment where it is located (Campbell, 1997). In this context, organizations should be considered as belonging to an open system with multiple influence relations, because organizations are not self-independent or self sufficient. Thus, additional disclosure of information by firms makes it grow and strengthen the ties between the company and stakeholders.

To Jensen (2000: 3) the stakeholder theory violates the proposition that any organization must have a single-valued objective as a precursor to purposeful or rational behaviour and "*a firm that adopts stakeholder theory will be handicapped in the competition for survival because, as a basis for action, stakeholder theory politicizes the corporation, and it leaves its managers empowered to exercise their own preferences in spending the firm's resources"*.

The same author made a proposal to clarify what he believed was the proper relation between value maximization and stakeholder theory, which he called enlightened value maximization. On one hand, the value maximization states that managers "*should make all decisions so as to increase the total long-run market value of the firm"*. Total value is the sum of the values of all financial claims on the firm (including equity, debt, preferred stock

and warrants). Stakeholder theory, on the other hand, says that managers "*should make decisions so as to take account of the interests of all the stakeholders in a firm*". Stakeholders include all individuals or groups who can considerably affect the welfare of the firm - not only the financial claimants, but also employees, customers, communities, and governmental officials, among others (Jensen, 2000: 2).

The enlightened value maximization uses much of the structure of stakeholder theory but accepts maximization of the long-run value of the firm as the criterion for making the requisite trade-offs among its stakeholders, and specifies long-term value maximization or value seeking as the firm's objective. According to its author, this proposal solves the problems that arise from the multiple objectives that follow the traditional stakeholder theory.

2.3.3.1.5 Positive theory of accounting

The positive theory of accounting aims to assess the effect of accounting on the various users and the effect of those users in accounting. The approach of the theory began with studies conducted in the capital market about the relationship between accounting information and stock price. For example, Ball and Brown (1968) developed a study to assess the market reaction, in relation to the share price, given the different types of accounting information.

It is with the work of Watts and Zimmerman (1978) that the further development of the positive theory of accounting arises. According to the authors the theory of accounting

needs to be positive and not normative, it should explain why some companies use certain procedures, while others do not, to be able to understand the pressures companies exert on the regulators of accounting standards, which may affect the distribution of wealth.

The study of Watts and Zimmerman's (1986) prompted several other studies in the context of financial accounting and contractual relationships between managers and shareholders. Consequently, the hypotheses developed by these works were based on the idea that managers select accounting methods in favour of their own interests. Having managers the possibility to choose the adoption of certain accounting procedures terms, they will have reasons to choose a particular procedure over another. Rational managers will choose the procedures that will benefit their management. Similarly, Giner (1995), when referring to the positive theory of accounting, argues that rational administrators will seek to maximize their benefit, so they will choose the accounting policies that benefit them the most. They will also put pressure on the regulators of accounting information in order to achieve their objective of maximizing benefits. Therefore, they will choose the accounting procedures that maximize profits, including, among other examples, the anticipation of gains and delay of costs.

The positive theory of accounting demonstrates its usefulness by allowing investors to understand the consequences of accounting decisions, including the distribution of wealth of the company, since the choice of accounting methods will determine the wealth of shareholders, directors, creditors and other stakeholders that are related to it.

The process of creating standards involves a number of different interests. It's the power of each group that will determine the creation of accounting standards and thus the modification of them. In this sense, a continuous circle exists between the influence of accounting on people's behaviour, and the influence of people's behaviour in accounting. Zimmerman (1979) argues that accounting standards are a political process rather than a technical process.

In short, the positive theory of accounting focus on the documentation of the factors, be them contractual or political, which might explain the decisions of accounting and reporting by the companies. Studies in this area address the incentives that managers have to influence the value of the company.

Despite the several supporting theories of disclosure, research on voluntary disclosure also focuses on the information role for capital markets (*e.g.* Healy and Palepu, 1993, 1995, 2001). This research focus on stock market motives for disclosure decisions. This topic will be approached in the following point.

2.3.3.2 Capital market reasons for voluntary disclosure

Healy and Palepu (2001) summarize six forces that affect manager's disclosure decisions for capital market reasons: capital market transactions, corporate control contests, stock compensation, litigation, proprietary costs and management talent signalling. The main aspects of each force are provided below.

2.3.3.2.1 Capital market transactions

Healy and Palepu (1993, 1995) hypothesize that investors' perceptions of a firm are important to corporate managers that are expecting to issue public debt or equity or to acquire another company in a stock transaction. Myers and Majluf (1984) state that if a situation of information asymmetry cannot be resolved, considering a firm whose managers have superior information than outside investors regarding the firm's future prospects, this firm will view his public equity or debt offers to be costly for existing shareholders. Consequently, managers who anticipate capital market transactions have incentives to provide voluntary disclosure to reduce the information asymmetry problem, thereby reducing the firm's cost of external financing. Barry and Brown (1985, 1986) and Merton (1987) reach a similar conclusion by modelling the premium that investors demand for supporting information risk when there is an information asymmetry between managers and outside investors. Managers can reduce their cost of capital by reducing information risk through voluntary disclosure.

Lang and Lundholm (1997) analyse the disclosure policies, specifically for firms that make equity offerings, and found that there was a significant increase in disclosure beginning six months before the offering, particularly for the categories of disclosure over which firms have the most discretion. Healy *et al.* (1999) find that firms with increased analyst ratings of disclosure have an abnormal high frequency of subsequent public debt offers. However, following Healy and Palepu (2001), debt and equity offers are not isolated events, making it difficult to assess whether manager's disclosure strategies are caused by public capital market transactions or by other related factors.

2.3.3.2.2 Corporate control contest

Warner *et al*. (1988) and Weisbach (1988) show that CEO turnover is associated with poor stock performance. Palepu (1986) and Mork *et al.* (1990) state that poor stock price performance is also associated with the probability of hostile takeovers, which results in high CEO turnover. Given that the risk of job loss follows poor stock and earnings performance, managers use corporate disclosures to reduce the likelihood of undervaluation and to explain the poor earnings performance. Healy and Palepu (2001) point as one limitation the fact that this analysis does not take account of multi-period considerations. For example, "*if managers expect that a commitment to provide extensive disclosure today could be used to hold them more accountable for any subsequent poor performance, managers of firms subject to corporate control actions may not wish to expand disclosure in a period of poor performance*" (Healy and Palepu, 2001: 421). The authors also argue that there has been relatively little research on voluntary disclosures accompanying hostile takeover. In this context, we must refer the work of Brennan (1999) who found that management is more likely to make earnings forecasts during contested takeover bids. The author examined the factors influencing voluntary forecast disclosure by target companies, whether good/bad news forecasts are disclosed and the influence of forecasts on the outcome of hostile bids. He found that disclosure was significantly more likely during contested bids. Moreover, in agreed bids, probability of forecast disclosure was greater the shorter the bid horizon. In contested bids, forecasts were more likely where there were large block shareholdings, for larger targets and for targets in the capital goods industry. The author also stated that there was a clear tendency to disclose good

news forecasts and found significant positive association between forecast disclosure and increase in offer price.

2.3.3.2.3 Stock compensation

Watts and Zimmerman (1990) following the theory of the firm, suggest that managers make accounting choices that can be considered to be efficient when they maximize the value of the firm or opportunistic if they increase the manager's welfare at the expense of other contracting parties. Therefore, the argument of efficiency assumes an alignment between organizational and managerial goals. Following arguments that relate disclosure policy and management incentives, Noe (1999) provide evidence that the incidence of management forecast is positively associated with trading by insiders in the firm's stock. Aboody and Kasznik (2000) find that firms delay disclosure of good news and accelerate the release of bad news prior to stock option award periods, consistent with managers making disclosure decisions to increase stock-based compensation. According to the authors, CEOs make opportunistic voluntary disclosure decisions that maximize their stock option compensation.

Also Healy and Palepu (2001) state that managers are rewarded using a variety of stock-based compensation plans. According to the authors, these types of compensations provide incentives for managers to engage in voluntary disclosures for several reasons. Managers interested in trading their stock holdings have incentives to disclose private information to increase liquidity of firm's stock. Managers have also incentives to make

voluntary disclosures to correct any perceived undervaluation (relative to their own information set) prior to the expiration of stock option award.

2.3.3.2.4 Litigation costs

The threat of shareholders litigation can have two effects on managers' disclosure decisions. First, legal actions against managers for inadequate or untimely disclosures can encourage firms to increase voluntary disclosure. Second, litigation can potentially reduce managers' incentives to provide disclosure, particularly of forward-looking information (Healy and Palepu, 2001). Skinner (1994) examines the first of these effects and hypothesized that managers of firms with bad earnings news have an incentive to pre-disclose that information to reduce the cost of litigation. Healy and Palepu (2001), about the second effect, state that litigation potentially reduces incentives to provide disclosures, particularly of forward-looking information, if managers believe that the legal system penalizes forecast, made in good faith, because it cannot effectively distinguish between unexpected forecast errors due to chance and those due to deliberate management bias. In this sense, the decision on disclosure of information by managers may be affected by the threat of litigation by shareholders. Shareholders can sue directors for inappropriately disclosing the information. This may encourage firms to make a disclosure of superior quality. Even the directors of companies can benefit from reporting additional information, since their work is evaluated.

2.3.3.2.5 Management talent signalling

The management talent signalling hypothesis considers that disclosure of positive information may allow managers to signal their talent to other companies. Trueman (1986) argues that talented managers have an incentive to make voluntary earnings forecast to reveal their type. According to the author, a firm's market value is a function of investor's perceptions of its manager's ability to anticipate and respond to future changes in the firm's economic environment. The earlier those investors infer that the manager has relevant information, the more favourable their assessment will be of the manager's ability to anticipate future changes and the higher the firm's market value will be.

2.3.3.2.6 Proprietary costs

Firm's decisions to disclose information to investors are influenced by concern that such disclosures can damage their competitive position in product markets (*e.g.* Verrecchia, 1983; Darrough and Stoughton, 1990; Feltham and Xie, 1992; Newman and Sansing, 1993; Daurrough, 1993; Gigler, 1994). The main conclusion of the studies about this topic research is that firms have an incentive not to disclose information that will reduce their competitive position, even if it makes it more costly to raise additional equity. However, according to Healy and Palepu (2001), this incentive appears to be sensitive to the nature of the competition, in particular whether firms face existing competitors or merely the threat of entry and on whether firms compete primarily on the basis of price or long-run capacity decisions.

Hayes and Lundholm (1996) argue that proprietary costs induce firms to provide disaggregated data only when they have similarly performing business segments. Firms with widely varying performance across business segments have incentives to conceal these performance differences from competitors by only reporting aggregate performance. Piotroski (1999) examines firms' decisions to provide additional segment disclosures. He concluded that firms with declining profitability and with less variability in profitability across industry segments are more likely to increase segment disclosures.

Also Verrecchia (1983, 1990) contend that firms will not fully disclose information when such disclosure entails proprietary costs. Bamber and Cheon (1998) provide evidence supporting this view. They demonstrate that companies with high proprietary information costs (*i.e*. those with few competitors) disclose less precise management earnings forecasts. Botosan and Stanford (2005) also find that firms withhold segment information when proprietary costs are high.

Finally, and according to Healy and Palepu (2001) the proprietary cost hypothesis can be potentially extended to include other externalities from information disclosure. They gave as example the work of Watts and Zimmerman (1986). These last argue that firms are concerned about potential political and contracting costs from financial disclosures, which may in turn affect their voluntary disclosure.

Apart from the described capital markets reasons for voluntary disclosure, several studies also examined the economic consequences of voluntary disclosure. Communicating useful information can be of considerable benefit to a reporting company because that will

enhance the likelihood that investors and other stakeholders will want to continue investing in or dealing with the organization. Nonetheless, it is essential to assess the benefits and the costs of producing such information, and to make any necessary trade-offs. This analysis will be done in the following point.

2.3.3.3 The economic consequences of voluntary disclosure

Voluntary disclosure of information won't exclusively be associated to advantages. The simple production of such information clearly entails costs to businesses. Furthermore, transparency provides benefits but it also involves costs, because it consists of explaining or justifying the actions, omissions, risks and constraints, of those that have responsibilities, to the people that have legitimate interests in the organization (Rodrigues, 2008). It becomes necessary to understand the relationship between costs and benefits of disclosure.

"*The benefits expected to arise from providing information in financial statements should exceed the cost of doing so*" (CICA, 2008: 11). Despite this, it is impractical, and perhaps impossible, to quantify the value of these benefits either to the preparers of corporate reports or to the users. Although some of the direct costs of preparation and analysis can be measured, it is not practical to quantify these costs in total. According to Leuz and Wysocki (2008) both *firm-specific* and *market-wide effects* are relevant for evaluating the economic consequences of reporting. The authors claim that the firm-specific effects are important because the balance of firm-specific costs and benefits of disclosures determines whether they are beneficial to the firm, *i.e.*, whether they increase firm value. Otherwise,

market-wide effects of firms' disclosures are relevant because they capture costs and benefits that firms may ignore or not fully internalize when making their individual disclosure decisions. Knowledge of these market-wide effects and externalities provides a basis for identifying the costs and benefits of regulating and enforcing the disclosure of information. Nevertheless, the benefits and costs of, for example, applying accounting standards may differ between entities depending in part on the nature, number and information needs of the users of their financial statements (CICA, 2008). Another important aspect to be considered, due to the fact that managers have incentives to make self-serving voluntary disclosures, it is not clear whether management disclosures are credible. According to Healy and Palepu (2001: 425) "*the extent to which voluntary disclosure mitigates resources misallocation in the capital market depends on the degree of credibility of information on the firm's economics that is not available from other sources, including required disclosures*". However, as stated previously, if the legal system cannot differentiate between casual forecast errors from intentional management bias, such disclosures can potentially impose significant litigation costs.

Following we present the principal arguments that literature provides referring to the costs and the benefits associated with disclosure.

2.3.3.3.1 Benefits of corporate disclosures

Most of the theories about this subject focus on the direct capital market benefits of firms' disclosure activities. These market benefits include liquidity, cost of capital and firm

valuation[14]. Despite this, the benefit of disclosure best supported by theory is the effect on market liquidity (*e.g.* Verrecchia, 2001).

In relation to market liquidity, the argument is based on the fact that information asymmetries among investors introduce adverse selection into share markets, which means that uninformed or less informed investors have to worry about trading with privately or better informed investors. According to Leuz and Wysocki (2008) uninformed investors lower (increase) the price at which they are willing to buy (sell) to protect against the losses from trading with informed counterparties. The authors also argue that, in this context, the price adjustment reflects the probability of trading with informed traders and the potential information advantage of these investors. In the presence of information asymmetry and adverse selection, this form of price protection when buying or selling shares introduces a bid-ask spread into secondary share markets and, similarly, reduces the number of shares that uninformed investors are willing to trade. Both effects reduce the liquidity of share markets, *i.e.*, the ability of investors to quickly buy or sell shares at low cost and with little price impact. According to Verrecchia (2001) corporate disclosure can mitigate the adverse selection problem and increase market liquidity by levelling the "*playing field*" among investors.

Higher liquidity is regarded as an indication that a firm's shares have became a more popular investment object due to the higher level of information disclosed by firms (Leuz and Verrecchia, 2000). Several authors argue that it is desirable for a firm that its shares are liquid, so the firm is not constrained in its use of the stock market (Lang and

[14] According to Leuz and Wysocki (2008) other potential observable benefits of firms' disclosure activities include changes in analyst following and institutional holdings. However, according to the authors, these outcomes are often viewed as indirect measures of access to low cost sources of capital.

Lundholm, 1993; Healy *et al.*, 1999; Bloomfield and Wilks, 2000). Trading costs on investors arise from the illiquidity and bid-ask spreads and, in these cases, the investors need to be compensated. Thus, the required rate of return of a security increases (*e.g.* Constantinides, 1986; Amihud and Mendelson, 1986). In addition, adverse selection can distort investors' trading decisions and result in inefficient and hence costly asset allocations for which investors need to be compensated, leading to a higher required rate of return or cost of capital (Garleanu and Pedersen, 2004).

Previous empirical research indicates that increased liquidity results in lower information asymmetry and cost of capital (Diamond and Verrecchia, 1991; Botosan, 1997; Leuz and Verrecchia, 2000; Botosan and Plumlee, 2002). The benefits related with the cost of capital are currently related with the fact that, in a situation of asymmetric information, there may be benefits for the company to release a set of information, resulting in the decrease of their financial risk. The cost of capital is equal to the risk-free interest rate plus the risk premium, the risk premium is greater the higher the risk associated with the company. Since the risk is also linked to uncertainty, if the company discloses information the risk decreases, also decreasing the risk premium and hence the cost of capital. Furthermore, there is a strong belief that a better and more open reporting of risk could lead to a lower cost of capital. That would be the consequence of knowing how those responsible for the business perceive the risk and manage it. In this case, actual and potential investors could evaluate the volatility of the firm's profitability and better assess its value. In this sense, additional disclosures may help listed companies to attract new investors, enabling them, thereby, to maintain a strong demand for its security titles with effect on market liquidity (Marston and Leow, 1998).

To Leuz and Wysocki (2008) there are theories that provide a direct link between disclosure and the cost of capital or firm value, without reference to market liquidity and adverse selection costs. The authors present as example the model developed by Merton (1987) where (some) investors have incomplete information and are not aware of all firms in the economy. As a result, risk sharing is incomplete and inefficient. Disclosures by these lesser known firms can make investors aware of their existence and enlarge the investor base, which in turn improves risk sharing and lowers the cost of capital. This effect is likely to be less relevant to large firms with a substantial analyst and investor following. Moreover, the investor base effect is susceptible to arbitrage if some investors know which of the stocks are not known by all investors (Merton, 1987; Easley and O'Hara, 2004).

The benefits of disclosure are also associated with the firm valuation. Many studies in agency theory suggested that more transparency and better corporate governance increases firm value by improving managers' decisions or by reducing the amount that managers appropriate for themselves (*e.g.* Shleifer and Wolfenzon, 2002). There can also be an indirect effect on the cost of capital (*e.g*. Lombardo and Pagano, 2002; Lambert *et al*., 2007). For example, Lambert *et al.* (2007) demonstrate that, if better disclosure reduces the amount of managerial appropriation, this effect generally reduces a firm's cost of capital.

Finally, Lang and Lundholm (1993) find that firms with more informative disclosures have larger analysts following, less dispersion in analysts forecast, and less volatility in forecast revisions.

The biggest difficulty faced by those involved in disseminating information, as stated previously, relates to the calculation of whether the cost of providing certain information will or not exceed the benefit of supplying it. Various studies conducted in this area suggested that companies disclose more information when the benefits of such information outweigh the costs associated with it. The several costs associated with increased disclosure are discussed below.

2.3.3.3.2 Costs of corporate disclosures

According to FASB (2010: 21) "*cost is a pervasive constraint on the information that can be provided by financial reporting*".

For the Australian Accounting Research Foundation (AARF, 1990) there is no universally accepted method to measure the costs and benefits of disclosure. The costs of providing information initially will be supported by the preparer, but the benefits belong to the various parties concerned, either directly or indirectly.

The costs of voluntary reporting can be classified into two broad categories: direct costs and indirect costs (Marston and Leow, 1998). The direct costs involve the collection and compilation, processing, storage, retrieval, analysis and interpretation, dissemination and fees paid to auditors. The indirect costs consist of costs of litigation and costs that occur as a result of the influence of disclosure in both the decisions as in the businesses activities of the company.

Disclosure of information may be constrained by the possibility that the disclosure may involve losses in competitive terms. Thus, there may be incentives for non-disclosure of information which may endanger the competitive position, even if this implies an increase in the cost of capital. Companies that disclose additional information may also incur in reputation costs due to failures in the disclosure (emerging news that are on the contrary with the ones previously disclosed), discrediting the company.

Information provided to capital market participants can also be used by other parties, *e.g.* competitors, labour unions, regulators, tax authorities, among others (Leuz and Wysocki, 2008). Detailed information about line-of-business profitability can reveal proprietary information to competitors (*e.g.* Feltham *et al.*, 1992; Hayes and Lundholm, 1996). The fact that other parties may use public information to the disclosing firm's disadvantage can reduce its disclosure incentives (Verrecchia, 1983). However, a competitive threat may not always induce firms to withhold information. For example, firms may disclose information to deter entry by competitors. Firms might also share information about market demand to prevent overproduction in the industry (Kirby, 1988). Furthermore, competitors can infer information from the fact that a firm does not make certain disclosures. Thus, the relation between disclosures and proprietary costs is complex and depends on the type of competition threat (*e.g.* Verrecchia, 1990; Feltham *et al*., 1992).

A related argument is that more transparency could be costly to existing financing relationships, especially with banks (*e.g.* Rajan and Zingales, 1998; Leuz and Oberholzer-Gee, 2006). About this subject Leuz and Wysocki (2008) argue that financing relationship may require some private information flows between a firm and its bank in order to protect

relationship-specific investments that make financing arrangements viable. Thus, firms that have or seek such financing relationships are likely to be reluctant to provide full disclosure.

2.3.3.3.3 Externalities of disclosure

According to Leuz and Wysocki (2008: 11) "*an individual firm's disclosure can have effects beyond the firm itself*". They refer to these kinds of effects as *market-wide effects*. According to the authors, individual firm's disclosures may have externalities that benefit non-competing firms in other industries by revealing relevant information about new consumer trends, technology, best operating practices, governance, among others. Their argument is based on the thesis that disclosures of operating performance and governance practices provide useful benchmarks that help outside investors to evaluate other firms' managerial efficiency or potential agency conflicts and in doing so lower the cost of monitoring. The authors believe that "*while the incremental contribution of each firm's disclosure is likely to be small, these information transfers could carry substantial benefits for the market or the economy as a whole*" (Leuz and Wysocki, 2008: 12).

The positive externalities, in the form of information transfers and liquidity in capital markets, were analysed by Dye (1990) and Admati and Pfleiderer (2000). Their argument was based on the fact that, as firm values and cash flows are likely to be correlated, the disclosure of one firm is useful to investors in valuing other firms and increases the investors' demand for shares in other firms. There is also the argument that firm-specific

disclosures have market-wide benefits because they eliminate duplicative efforts of information to intermediaries and investors and that firms are likely the lowest-cost producer for corporate information (*e.g.* Easterbrook and Fischel, 1984; Diamond, 1985).

Fishman and Hagerty (1989) argue that there can be also negative effects or costly externalities to firms' reporting. They showed that an increase in disclosure by one firm can attract investors away from other firms (*i.e.* if processing information is costly). In markets that are not perfectly competitive, this effect lowers the price efficiency of other firms and creates a negative externality. This argument can be extended to apply across markets or countries.

Also fraudulent disclosures and financial reports can send false signals to industry players about new investment opportunities, lead governments to pursue incorrect regulatory policies, and cause capital rationing in the industry. This argument is based on the fact that individual firm's misreporting activities may have a negative impact to related firms, governments and investors (Sidak, 2003).

In conclusion, there are numerous reasons pointed by the literature why an individual firm's disclosures extend beyond the firm itself. According to Leuz and Wysocki (2008: 14) the market-wide effects could be large in the aggregate, and impose relatively small costs on the disclosing firm. But the authors also recognize that, as individual firms generally cannot internalize the market-wide benefits of their disclosure activities, even relatively small disclosure costs could discourage additional disclosure activities. For them

the problem is that "*firms trade-off only the private (or firm-specific) costs and benefits and hence do not provide the socially optimal level of disclosure*".

2.3.3.4 Measures of voluntary disclosure

The narrative communication in annual reports is viewed as the crucial element in achieving the desired *step-change* in the quality of corporate reporting (Beattie *et al*., 2004). Accounting researchers have increasingly focused their efforts on investigating disclosure, in particular the determinants of disclosure and the capital market consequences. Healy and Palepu (2001) observe that one of the limitations of that kind of studies was the difficulty in measuring the extent of voluntary disclosure, while Core (2001) argues that improved measures of disclosure quality also need to be developed.

Disclosures are often qualitative and narrative in nature which makes objective measurement difficult. Moreover, theoretical research provides little guidance on what form, quantity and frequency of disclosure is relevant for various stakeholders (Leuz and Wysocki, 2008).

According to Beattie *et al.* (2004) two principal ways of measuring disclosure have been employed. The first approach has been to use subjective analysts' disclosure quality ratings. The second approach has been to use researcher constructed disclosure indices where the amount of disclosure is used as a proxy for disclosure quality. The principal measures of voluntary disclosure are following described.

2.3.3.4.1 Subjective ratings

In the United States, many studies make use of analysts' scores of disclosure quality provided by the Association of Investment Management and Research (AIMR)[15] (formerly the Financial Analysts Federation, FAF). These reports provide an overall measure of corporate communications with investors. According to Beattie *et al.* (2004) each year an average of 27 industries are covered, with an average of 17 companies being evaluated by 13 analysts in each industry. There are separate ratings for annual published information, quarterly and other published information, and investor relations.

Lang and Lundholm (1993: 247) assume that the ratings measure "*disclosure informativeness*". They acknowledged that "*a disadvantage of the FAF data is that they are based on analysts' perceptions of disclosure rather than direct measures of actual disclosure*". Healy and Palepu (2001) criticise these rankings on three grounds: the lack of clarity whether the analysts on the panels take the ratings seriously, the unclear basis on which firms are selected for inclusion and the potential biases that analysts bring to the ratings. In some countries, publicly available ratings are not routinely available and so researchers have had to approach analysts directly (*e.g.* Clarkson *et al.,* 1999).

About this subject, Leuz and Wysocki (2008: 24) argue that these ratings "*capture the usefulness of firms' disclosures as perceived by expert users of this information*". According to the same authors, the limitations of the AIMR rankings are that they are only

[15] Studies that used the AIMR ranking are, for example, Imhoff (1992), Welker (1995), Lang and Lundholm (1996), Sengupta (1998), Healy *et al.* (1999), Bushee and Noe (2000), Gelb and Zarowin (2002), Lundholm and Myers (2002), Botosan and Plumlee (2002) and Byard and Shaw (2003).

applicable to a subset of large United States. Moreover, there are "*questions about potential bias in the rankings based on sell-side analysts' objectives in assigning disclosure ratings*" (Leuz and Wysocki, 2008: 25).

2.3.3.4.2 Disclosure indices

According to Beattie *et al*. (2004: 210), because of the difficulty of assessing disclosure quality directly, "disclosure *index studies assume that the amount of disclosure on specified topics are proxies for the quality of disclosure*". In many cases, a simple binary coding scheme is used, whereby the presence or absence of an item is recorded. Other coding schemes incorporate ordinal measures (frequently three levels) to allow for the "quality" of the specific disclosure to be assessed.

An excellent review of the use of disclosure indices in accounting research, particularly in company annual reports, was provided by Marston and Shrives (1991). To measure the extent of general disclosure the researcher starts with the definition of items. Weightings were typically achieved by conducting surveys among relevant user groups, asking about the importance of each item, although it has been found that the weighted and un-weighted scores tend to give the same results where there are a large number of items. Scoring can take several forms, most commonly either a nominal score to indicate the presence/absence of the item or an ordinal level score to capture the degree of specificity of the item. Also the importance of clear instructions to achieving satisfactory levels of reliability is emphasised by Marston and Shrives (1991). The authors underline that well specified

decision categories, with well specified decision rules, may produce few discrepancies when used even by relatively inexperienced coders.

In relation to these self-constructed measures of disclosure, Healy and Palepu (2001: 427) also argue that these kind of measures face a different set of problems, "*because the authors have developed their own metric of voluntary disclosure, there is increased confidence that the measure truly captures what is intended*". In this sense, the authors also argued that if "*constructions of the metrics involves judgement on the part of the researcher, the findings may be difficult to replicate*".

Marston and Shrives (1991: 195) also emphasise that the index score "*can give a measure of the extent of disclosure but not necessarily the quality of disclosure*". Nevertheless, they concluded that while that construction of disclosure indices inevitably involves subjective judgment, it has proved to be a valuable research tool that will continue to be used as long as company disclosure is a focus of research.

Botosan (1997)[16] constructs her own index to measure the voluntary disclosure level using 122 companies in the machinery industry, for the year of 1990. She focused on the annual report disclosures because annual report disclosure levels are correlated positively with the amount of disclosure provided via other media and it is considered by users to be one of the most important sources of corporate information (Botosan, 1997: 329-331). The selection of items included in the index was guided, principally, by recommendations provided in the Jenkins Report (AICPA, 1994), the SRI International (1987) survey of

[16] Botosan (1997) provides a discussion about the advantages and disadvantages of using AIRM disclosure index versus a self constructed disclosure index.

investor information needs and the Canadian Institute of Chartered Accounts (CICA, 1991). Also Robb *et al.* (2001) undertake a topic-based analysis of non-financial disclosures, as recommended by the Jenkins Report (AICPA, 1994). The categories used in their disclosure scoring sheet are based upon the list of non-financial information items desired by users included in the database of materials used by the Jenkins Committee. These items were grouped into categories. A total of 65 items were included. For each item, a score of 1 (no disclosure), 2 (some disclosure) or 3 (extensive disclosure) was awarded. These scores were aggregated to form an overall disclosure score.

Table 2.6 presents a summary of some recent studies using disclosure indices, constructed by the authors themselves, as well as the categories used in the construction of such indices.

Table 2.6 – Categories used to build voluntary disclosure indices

Botosan (1997)	Background information (6 items) Ten or five year summary of historical results (5 items) Key non-financial statistics (8 items) Projected information (5 items) Management discussion and analysis (11 items)
Standard & Poor's (2002)	Transparency of ownership (7 items) Concentration ownership (4 items) Voting and shareholder meeting procedures (8 items) Business focus (14 items) Accounting policy review (6 items) Accounting policy details (3 items) Related party structure and transactions (4 items) Information auditors (4 items) Board structure and composition (8 items) Role of the board (12 items) Director training and compensations (6 items) Executive compensation and evaluation (9 items)
Chau and Gray (2002)	General corporate information (2 items) Corporate strategy (6 items) Acquisitions and disposals (4 items) Research and development (4 items) Future prospect (11 items) Information about directors (7 items) Employee information (22 items) Social policy and value-added information (9 items) Segmental information (10 items) Financial review (25 items) Foreign currency information (6 items) Stock price information (7 items)
Eng and Mak (2003)	General corporate information (5 items) Corporate strategy (5 items) Management discussion and analysis (8 items) Future prospects (4 items) Other useful strategic information Employee information (4 items) Other useful non-financial information Performance indicators (6 items) Financial ratios (4 items) Other useful ratios Projected information (3 items) Foreign currency information (3items) Other useful financial information
Petersen and Plenborg (2006)	Strategy (12 items) Competition and outlook (13 items) Production (13 items) Marketing strategy (13 items) Human capital (11 items)
Wang *et. al* (2008)	General corporate characteristics (2 items) Corporate strategy (6 items) Acquisitions and disposals (6 items) Research and development (4 items) Future prospects (10 items) Employee information (12 items) Social responsibility and value-added disclosures (4 items) Segment information (5 items) Financial review information (20 items) Foreign currency information (5 items) Stock/ price information (3 items)
Allegrini and Greco (2011)	Financial information (15 items) Projected information (8 items) Capital market data (5 items) Strategic information (12 items) Risk information (13 items) Sustainability information (7 items)

2.3.3.4.3 Other measures

In countries where publicly available ratings are not routinely available some researchers have had to approach analysts directly (*e.g.* Clarkson *et al.,* 1999). A variant on the use of analyst ratings is the use of Securities and Exchange Commission (SEC) ratings of Management Discussion and Analysis (MD&A) compliance, a measure used by Barron *et al.* (1999). We should refer that other studies focus on the timing and frequency of firms' disclosures, such as the frequency and precision of management forecasts of earnings (*e.g.* Hirst *et al.,* 2008) and conference calls with analysts (*e.g.* Tasker, 1998; Frankel *et al.*, 1999; Bushee *et al*., 2003). Although it is difficult to objectively quantify the information issued with management forecasts and during conference calls, the studies highlight that these disclosure events generally reveal useful qualitative and contextual information to outside investors.

Some studies made a direct attempt to measure the "*quality*" of accounting information by analysing the properties of a firm's reported earnings. Dechow and Dichev (2002) and Francis *et al.* (2004, 2005) model the relation between a firm's cash flows and accruals to derive a measure of earnings quality. The studies used these measures of accruals quality as proxies for overall information quality.

Finally, following the suggestions of Core (2001), some studies have recently focused on different techniques in natural language processing technologies as measures and proxies of disclosure. Li (2008) provides the first large-sample evidence of the determinants and implications of the lexical properties of corporate disclosures. He examined the

implications of annual report readability and other lexical features of the annual report for current performance and earnings persistence. The findings suggested that annual reports of firms with poor performance are more difficult to read and that, in turn, the profits of firms with annual reports that are easier to read are more persistent.

In the previous points we addressed the main aspects of corporate governance and corporate disclosure, given a particular emphasis to the voluntary disclosure literature. In the following points we will analyse the previous research about the relation between the governance rules, voluntary disclosure and information asymmetry.

2.4 The relation between governance rules, voluntary disclosure and information asymmetry in the market

Corporate governance embraces the controls and procedures that exist to ensure that management acts in the interest of shareholders. In this sense, corporate governance affects the information disclosed by the firm to its shareholders, making it less likely that management, acting in its self-interest, does not fully disclose relevant information to shareholders.

There have been several studies testing the relationship between corporate governance and voluntary disclosure. On the corporate governance side, most of the research focuses on ownership structure and board structure. Specific types of directors and shareholders may have the motivation, abilities, and knowledge to voluntarily increase the level of disclosure (Donnelly and Mulcahy, 2008).

The relation between corporate governance and information asymmetry has been studied through two main points. The relation between the board structure and information asymmetry, through the corporate disclosure, and the relation between ownership structure, information asymmetry and stock liquidity.

This discussion will be provided below, starting with the concept of information asymmetry.

2.4.1 Information asymmetry

The information asymmetry is the extent to which the amount of information regarding the company varies from one group of investors to another and, thus, provides the differentiation between the informed and uninformed investors. In this sense, the asymmetric information arises when, in the context of market transactions, the two sides that deal with the subject or content of information, in terms of quantity and quality, are not equal (Watts and Zimmerman, 1986). According to Ranaldo (2002) the information asymmetry refers to information not yet embodied in the fundamental asset value. To Brown and Hillegeist (2007: 444) information asymmetry in the stock market occurs when "*one or more investors possess private information about the firm while other investors are uninformed (i.e. have access only to public information)*".

As stated previously, the separation of ownership and control in publicly listed companies gives rise to information asymmetries between managers and investors because managers have superior information on the firm's current and future performance than outside

investors (Jensen and Meckling, 1976; Myers and Majluf, 1984). The literature recognizes that firms might find it advantageous to give additional pieces of information to outsiders, through the annual report or other communication channels. The information asymmetry between firms and potential investors, due to a low level of disclosure, increases the cost of capital by introducing the adverse selection between buyers and sellers of the firm's shares (Petersen and Plenborg, 2006).

According to Welker (1995) considerable resources are devoted to establish and enforce regulations that improve public perceptions of corporate disclosure practices. Despite these regulatory efforts, firms still have considerable discretion in determining the *timeless*, *scope*, *content*, and *form* of disclosure provided to equity market participants, among others. According to Welker (1995: 802) "*this diversity in disclosure practices produces variation in the level of information asymmetry characterizing trade in equity market*".

Welker (1995) also speaks about one persistent component of the adverse selection problem that is the possibility that material firm-specific information exists and has not been publicly disclosed by the firm. According to the author this "*withheld*" information may be privately available to select traders who invest in costly information acquisition, creating an adverse selection problem when uncertainty about the occurrence of information events exists and firms follow a policy of providing incomplete disclosures with respect to such events.

Past literature has pointed out the adverse effects that information asymmetries have on the functioning of markets (Akerlof, 1970). Information asymmetry is thought to promote

reluctance to trade and increase the cost of capital as investors "*price protect*" against potential losses from trading with better informed market participants (Bhattacharya and Spiegel, 1991). The study of market microstructures formalized this notion of price protection and suggested that observable measures of market liquidity can be used to identify the perceived level of information asymmetry facing (uninformed) participants in equity markets (Lev, 1988).

To Kanagaretnam *et al*. (2007) investors possess varying degrees of information about the companies in which they invest and this may lead to the existence of informed traders, which transact with the advantage of superior information. Kim and Verrecchia (1994) suggest that earnings releases will reduce information asymmetry as they disseminate information to all market participants. However, the same authors also recognized that information asymmetry may remain at an elevated level following the earnings release because some traders are better able to process the information than others.

Analytically, Barry and Brown (1985), Diamond (1985), Diamond and Verrecchia (1991) and Kim and Verrecchia (1994) argue that more information generally reduces information risk on prices. Likewise, voluntary disclosure serves to reduce information asymmetry among traders. Empirically, Welker (1995), Leuz and Verrecchia (2000), Espinosa *et al*. (2008), among others, investigate links between voluntary disclosure and stock liquidity. They found that firms with better quality disclosure have lower bid-ask spreads. In addition, Botosan and Plumlee (2002) test the capital market effect of voluntary disclosure on the cost of capital, and they found that the cost of capital decreases with more disclosure. Trabelsi *et al.* (2004) and Trabelsi *et al.* (2008) study the incentives of internet

financial reporting, and found that internet disclosure helps to reduce analysts' forecasting error.

Most of the above evidences are consistent with the idea that public voluntary disclosure serves to reduce information asymmetry. Furthermore, the previous disclosure research also demonstrated that the corporate governance quality has a significant impact on both the quantity and quality of these corporate information disclosures (*e.g.* Ho and Wong, 2001; Chau and Gray, 2002; Eng and Mak, 2003; Kanagaretnam *et al.,* 2007).

2.4.2 Corporate governance and voluntary disclosure

Jensen and Meckling (1976) argue that when ownership and control are separated, the potential for agency costs arises because of conflicts of interests between contracting parties (manager and shareholders). The disclosure of information could efficiently protect shareholders' interests against managers' behaviour.

The disclosure strategy is greatly influenced by the form of the ownership and management structure (Gelb, 2000; Ho and Wong, 2001; Chau and Gray, 2002). Like stated previously, specific types of directors and shareholders may have the motivation to voluntarily increase the level of disclosure (Donnelly and Mulcahy, 2008). In this sense, in what concerns the relation between corporate governance and voluntary disclosure, most of the research focused on ownership structure and board structure.

-Ownership Structure

Fama and Jensen (1983) argue that when the companies' capital is widely held, the potential of conflicts between principal and agent is greater. To reduce these conflicts some shareholders induce managers to disclose more corporate information for the truthful evaluation of the firm's performance. As a result information disclosure is likely to be intensive in widely held firms so that principals can effectively insure that their economic interests are optimized. Previous empirical evidence also indicates a negative relation between ownership concentration and disclosure (*e.g.* McKinnon and Dalimunthe, 1993; Mitchell *et al*., 1995; Schadewitz and Blevins, 1998). Also Chau and Gray (2002) suggest that voluntary disclosures are positively associated with diffused capital firms. Their results show that there is a positive association between wider ownership and the extent of voluntary disclosure.

Brown and Higgins (2001) have made a comparative analysis of earnings announcement surprises between the United States and 12 other countries. They show that American companies manage more earning surprises by issuing frequently earning disclosures than their counterparts. This finding may be explained by corporate governance differences, mainly in concern with ownership structure which is largely diffused in United States firms.

Furthermore, in a more concentrated ownership situation, the impact on voluntary disclosures is more complicated. Conflicts of interests are no more between managers and shareholders but between large and small shareholders (Ho and Wong, 2001). Under very

high ownership concentration, managers are encouraged to behave against the interests of small shareholders by retaining information.

The literature also emphasizes the value of the monitoring role played by certain kind of shareholders.

Jensen and Meckling (1976) argue that additional monitoring is required by outside shareholders as managerial ownership (*i.e.* ownership by executive directors) decreases. This monitoring puts pressure on managers to disclose more information than is demanded by law or regulation. Ruland *et al.* (1990) provide evidence consistent with Jensen and Meckling (1976) by showing that as managerial ownership increases, firms are less likely to issue management earnings forecasts. Gelb (2000) shows that companies with lower levels of managerial ownership are more likely to receive higher ratings for the disclosures provided in their annual and quarterly reports. Eng and Mak (2003) argue that voluntary disclosure is a substitute for outside monitoring and so is negatively related to managerial ownership. They find evidence consistent with this prediction. More recently, Baek *et al.* (2009) find that there is a negative relationship between the level of managerial ownership and the level of disclosure.

Institutional investors are a special group of shareholders. According to Donnelly and Mulcahy (2008) the reasons why institutional investors more easily apply their monitoring role on firm management is because they are professionals and so their cost of monitoring when compared with other small shareholders is significantly reduced.

According to the literature, institutional investors who own large blocks of a company's shares:

(1) have a greater incentive and ability to acquire more timely pre-disclosure information than small shareholders (Smith, 1976);
(2) are better able to evaluate the financial decisions of management (Chung *et al*., 2002);
(3) enjoy greater voting power, making it easier to take corrective action when it is deemed necessary (Donnelly and Mulcahy, 2008).

Diamond and Verrecchia (1991) find that substantial shareholdings by institutional investors may also encourage more disclosure to reduce information asymmetry. Bos and Donker (2004) claim that institutional investors have incentives to detect the self-serving behaviour of management. Furthermore, these authors claim that institutional investors possess financial know-how and are well able to interpret the information disclosed in the annual reports. Ajinkya *et al.* (2005) find that institutional ownership is positively associated with managerial earning forecasts.

In relation to family ownership, Chau and Gray (2002) argue that the level of information disclosure is likely to be less in family-controlled firms. For the authors, family-controlled firms have little motivation to disclose information in excess of mandatory requirements because the demand for public disclosure is relatively weak in comparison with companies that have wider ownership. Ho and Wong (2001) find a negative relation between family controlled firms and the level of voluntary disclosure. Family controlled firms have concentrated power and are very reserved in making voluntary disclosures, but tend to adhere to rules and regulations (Tan, 2000).

Finally, some studies also analyse the relation between government ownership and voluntary disclosure. In a greater number of countries the government has shares of some companies that are of strategic importance to the state. They are run like other private commercial companies but may have to look beyond pure profit goals and consider goals related to the interests of the nation. These goals may conflict with the commercial objectives of the enterprise (Mak and Li, 2001). According to Eng and Mak (2003) enhancing shareholder value may not be the primary objective of these companies. Managers are also likely to face less discipline from the market for corporate control because the government is expected to be a long term investor and is unlikely that these companies support unsolicited takeover offers. Eng and Mak (2003) find a positive relationship between government ownership and disclosure. More recently, Wang *et al.* (2008) also find evidence that the level of voluntary disclosure is positively related to the proportion of state ownership.

- Board Structure

Fama (1980) suggests that board characteristics are considered as an efficient internal monitoring mechanism. What previous studies wanted to know was how these board characteristics could constrain managers to work in accordance with shareholders' expectations, by disclosing regular information and thus making the market constantly informed. The board of directors, who have been delegated the authority from the shareholders to work on their behalf and make decision in the company's operations, play the crucial role in the control mechanism to monitor and supervise the management (Patelli and Prencipe, 2007).

Voluntary disclosure and independent directors have been viewed as a control mechanism in corporate governance to reduce the principal-agent problem between shareholders and managers. To Eng and Mak (2003) the higher proportion of independent directors on boards, the more information they would like to disclose to outside investors. Also Ajinkya *et al.* (2005) find that companies with more independent directors are more likelihood to provide a forecast in their annual reports. Independent directors could mitigate the information asymmetry between management and shareholders by providing more voluntary disclosure (Lim *et al.*, 2007). Also Arcay and Vázquez (2005) and Patelli and Principe (2007) obtain a positive correlation between the proportion of independent directors on the board and the amount of voluntary information disclosed by the companies. To García-Meca and Sánchez-Ballesta (2010) the positive association between board independence and voluntary disclosure especially happens in countries with high investor protection rights.

To Baysinger and Hoskisson (1990) inside directors[17] are active participants in firm's decisions, as members of their top management teams, and have access to internal information regarding firm resources, projects, and strategic alternatives. To the authors, inside directors also play an important role in educating independent directors and in providing boards with more detailed information. To Fama and Jensen (1983) inside directors potentially want to provide more information to boards as they are familiar with company's operation better than independent directors. Inside directors also have other reasons to provide more voluntary disclosure such as their remuneration incentives, to

[17] According to Pfeffer (1972) inside directors are directors who are currently involved in the management of the organization and, in some definitions, former executives as well.

protect their jobs and to protect their reputation from the firm failure or poor performance (Lim *et al.,* 2007).

As suggested by Jensen and Meckling (1976) managers who own equity in a firm do not have the same incentives to misappropriate a firm's resources, since they would suffer directly from reduced share value while managers who do not own equity in a firm would not suffer the same consequences. Prior studies that link stock-based incentives and voluntary disclosure have used agency theory to explain the relationship. The work of Nagar *et al.* (2003) examines the association between disclosure activities of managers and stock-based incentives of US companies. The results of the study suggest that stock-based incentives are able to mitigate the agency problem and enhance alignment of managers' interests with those of shareholders. Arcay and Vázquez (2005) also find that directors' stock option plans are positively related to voluntary disclosure.

The literature also presents the idea that boards comprising of members who are more competent or knowledgeable will do a better job of monitoring the activities of management and make better decisions. Klein (1998) and Ashbaugh-Skaife *et al.* (2006) measured board competency or expertise by the percentage of board members that sit on boards of other companies. Directorships serve as a measure of a director's reputation as a monitor. In contrast, Ferris *et al.* (2003) claim that busy boards are as effective as non-busy boards at monitoring and find no relation between the average number of directorships held by outside directors and the firm's market-to-book ratio.

Also the separation of CEO and chairman positions is pointed by some studies as a way that helps to improve the monitoring function of the board. Firms that have one individual

who serves as both chairman and chief executive officer/managing director (CEO duality) are considered to be more managerially dominated (Molz, 1988). Otherwise, the person who occupies both roles would tend to withhold unfavourable information to outsiders (Ho and Wong, 2001). Jensen (1993) argues that conflicts of interests and difficulties in performing the monitoring function over management arise when the same individual holds both positions. This dual-role situation is quite common in some European countries. A number of studies have identified the combining of these two positions with poor disclosure practices. For example, Forker (1992) finds a significant negative relationship between the combination of the two roles and the extent of disclosure. Furthermore, Ho and Wong (2001) also observe a negative relationship, although a non-significant one, between corporate disclosure and the presence of a dominant personality on the firm's board.

With respect to the size of the board, John and Senbet (1998) suggest that while the board's monitoring capacities increase as the number of members on the board increases, this benefit may be offset by the incremental cost of poorer communication and decision-making efficiencies that are often associated with large groups. To Lipton and Lorsch (1992) and Jensen (1993) a board that is too large may actually have diminished monitoring capabilities. Empirically, Yermack (1996) finds that firm valuation is negatively related to the size of the board. Recent researches question the view that larger boards are disadvantageous to board effectiveness and to shareholders (Coles *et al.* 2008; Di Pietra *et al.* 2008; Larmou and Vafeas 2010). Coles *et al.* (2008) find that large and diversified firms tend to use a greater number of directors in their boards of both monitoring and advising purposes. Also recently, Allegrini and Greco (2011) show

empirically that firms with larger boards show greater transparency for outside shareholders. Thus, there is no preponderance of theory or empirical evidence to suggest a relationship between board size and the level of voluntary disclosure.

Finally, several empirical evidences indicate that voluntary disclosure is positively related to the functioning of monitoring and control structures. The audit committee operates as a monitoring mechanism to improve the quality of information conveyed to external parties (Pincus *et al.*, 1989) and "*oversees the preparation and communication of financial information to third parties to ensure that such data fulfils the requisites of clarity and the completeness of disclosure*" (Smith Report, 2003: 12). Empirical evidence indicates that voluntary disclosure is positively related to the functioning of an audit committee (*e.g.* Ho and Wong, 2001; Arcay and Vázquez, 2005; Allegrini and Greco, 2011). Furthermore, Dechow *et al*. (1996) and Peasnell *et al*. (2001) observe that audit committees help to reduce the likelihood of accounting fraud. The signalling literature suggests that the choice of an external auditor can serve as a signal of firm value. Generally, companies are likely to choose a large audit firm since such an action signals to investors their acceptance of the auditor's demands for higher quality disclosure as well as the quality of a firm's earnings performance (Datar *et al.,* 1991). Wang *et al.* (2008) show that the level of voluntary disclosure is positively related to the reputation of the engaged auditor.

Like described previously, several corporate governance structures have been tested in order to understand the relation between governance rules and voluntary disclosure. Table 2.7 summarizes some of the most recent empirical studies about this subject, hypotheses tested and main conclusions.

Table 2.7 - Recent studies about the relation between corporate governance and voluntary disclosure

Authors	Study objectives	Measure of Voluntary disclosure	Tested Hypotheses	Methodology	Main results
Gelb (2000)	Examine empirically the effect of managerial ownership on firm's disclosures	Disclosure rankings from the AIMR Corporate Information Committee Reports	Managerial ownership	Univariate analysis and multiple regression	The results show that companies with lower levels of managerial ownership are more likely to receive higher ratings for the disclosures provided in their annual and quarterly reports, even after controlling for size, performance, volatility of returns, the frequency of securities offerings and proprietary costs.
Ho and Wong (2001)	Relate four major corporate governance attributes with the extent of voluntary disclosure	Voluntary disclosure index	Proportion of independent non-executive directors on the board Existence of an audit committee Existence of dominant personalities Percentage of family members on the board.	Multiple regression models	The results indicate that the existence of an audit committee is significantly and positively related to the extent of voluntary disclosure, while the percentage of family members on the board is negatively related to the extent of voluntary disclosure.
Chau and Gray (2002)	This study examine whether ownership structure is associated with voluntary disclosure	Voluntary disclosure index	Wider ownership Family or concentrated ownership	Multivariate tests	The results show that there is a positive association between wider ownership and the extent of voluntary disclosure. The strong prevalence of family-controlled companies is likely to be associated with lower levels of disclosure.
Eng and Mak (2003)	Examine the impact of ownership structure and board composition on voluntary disclosure	Voluntary disclosure index	Managerial ownership Large shareholder ownership Government ownership Proportion of outside directors.	OLS regression	The results show that ownership structure and board composition affect disclosure. Lower managerial ownership and significant government ownership were associated with increased disclosure.

Table 2.7 - Recent studies about the relation between corporate governance and voluntary disclosure (continuation)

Authors	Study objectives	Measure of Voluntary disclosure	Tested Hypotheses	Methodology	Main results
Arcay and Vázquez (2005)	Examine the relationships among corporate characteristics, the governance structure and disclosure policy	*Actualidad Económica* index	Proportion of independent directors Existence of an audit committee Separation of the functions of CEO and chairman Board participation in the capital Stock option plans Size of the board Adoption of rules of good governance Ownership concentration Size of the company Listing foreign stock exchanges Operating in regulated industries	Univariate and multivariate analysis	The results show that a firm's size, along with some mechanisms of corporate governance such as the proportion of independents on the board, the appointment of an audit committee, and director's shareholdings and stock option plans, are positively related to voluntary disclosure. These governance practices were significantly influenced by cross-listings and by ownership structure of the firm.
Patelli and Principe (2007)	Investigate the correlation voluntary disclosure and independent directors in companies characterized by the presence of a dominant shareholder	Voluntary disclosure index	Proportion of independent members on the board of directors in companies characterized by the presence of a dominant shareholder	Multiple regression	The results show that there is a positive correlation between the proportion of independent directors on the board and the amount of voluntary information disclosed by the companies in their annual reports. The correlation was found through a multivariate analysis controlling for residual ownership diffusion, size, leverage, profitability and labour pressure.
Wang *et al.* (2008)	Determinants and consequences of voluntary disclosure	Voluntary disclosure index	State ownership Foreign ownership Firm performance Auditor type Cost of debt	Multiple regression	The results show that the level of voluntary disclosure is positively related to the proportion of state ownership, foreign ownership, firm performance and reputation of the engaged auditor. There was no evidence that companies benefit from extensive voluntary disclosure by having a lower cost of debt capital.

Table 2.7 - Recent studies about the relation between corporate governance and voluntary disclosure (continuation)

Authors	Study objectives	Measure of Voluntary disclosure	Tested Hypotheses	Methodology	Main results
Donnelly and Mulcahy (2008)	Examine the relation between board structure, ownership, and voluntary disclosure.	Voluntary disclosure index	Proportion of non-executive Directors CEO/Chairman duality Institutional investors Managerial ownership	Poisson regression model	The results show evidence that voluntary disclosure increases with the number of non-executive directors on the board. Firms that have a non-executive chairman make greater voluntary disclosures than other firms. This finding was not robust to the inclusion of other explanatory variables. That was no evidence that ownership structure is related to voluntary disclosure.
Baek *et al.* (2009)	Examine the relationship between managerial ownership, corporate governance and voluntary disclosure	Standard and Poor's Transparency and disclosure survey data.	Managerial ownership Executive compensation Proportion of outside directors Block ownership Institutional ownership	Multiple regression	This study finds that managerial ownership levels and other types of governance mechanisms in place affect the level and type of corporate discretionary disclosure. For firms with low levels of managerial ownership, a negative relationship between the level of managerial ownership and the level of disclosure. In addition, firms with a high percentage of outside directors are more likely to disclose board and management processes information.
Allegrini and Greco (2011)	Relation between corporate boards, audit committees and voluntary disclosure	Voluntary disclosure index	Board independence Board size CEO duality Lead independent director (LID) Board committees Board and audit committee diligence	Multivariate analysis	The results show that board size and diligence show a positive relationship with voluntary disclosure. The audit committee meeting frequency also showed a positive impact on the amount of information voluntarily disclosed. They also found that board committees, board composition and the presence of a LID have no relationship with voluntary disclosure, whilst CEO duality shows a negative impact with a poor level of significance.

2.4.3 Corporate governance and information asymmetry

Like stated previously, the relation between corporate governance and information asymmetry has been studied through two main points. The relation between the board structure and information asymmetry, through the corporate disclosure, and the relation between ownership structure, information asymmetry and stock liquidity. These two points are described below.

-Ownership Structure

The studies that relate ownership structure and information asymmetries focus, essentially, on two topics of research: the effects of large shareholding on information asymmetry and the effects of large shareholding on stock liquidity.

In relation to the first topic, Berle and Means (1932) argue that professional managers are effectively in control of widely-held firms at the expense of shareholders. However, following studies also argued that when one shareholder takes control of management by holding a large block of shares, he can exploit other shareholders (*e.g.* Shleifer and Vishny, 1997; La Porta *et al.,* 1998, 1999, 2000; Bebchuk and Roe, 1999).

Being inspired by the findings of Claessens *et al.* (2002), Attig *et al*. (2006) hypothesize that a larger deviation of control from ownership should be associated with more selfish behaviour by the ultimate owner. To increase the chance of executing his plans, the

ultimate owner would minimize and delay the disclosure of information so that other shareholders cannot intervene, or must base their decisions on inadequate information (see also Fan and Wong, 2002; Chau and Gray, 2002). Poor disclosure worsens the information asymmetry problem and the large shareholder may even trade on his insider information to extract the private benefits of control.

In this sense, and keeping other factors constant, Attig *et al*. (2006) argue that these will result in a wider bid-ask spread and lower stock liquidity. Their results are consistent with the notion that the ultimate owners of these stocks may have selfish agendas. To increase the probability of the agendas being implemented, the firms may have poor information disclosure, resulting also in poor stock liquidity.

Recently, Jiang *et al.* (2011) investigate the impact of different classes of ownership concentration on information asymmetry conditional upon corporate voluntary disclosures. Their finding supports the adverse selection hypothesis and demonstrates that disclosures significantly attenuate information asymmetry risk. The authors show that this effect is particularly pronounced for firms with management-controlled ownership structures.

In relation to the second topic, it is generally believed that a dispersed ownership leads to better market liquidity (*e.g.* Booth and Chua, 1996; Bolton and Von Thadden, 1998). Bolton and Von Thadden (1998) argue that in a concentrated ownership structure the number of shareholders who can trade the stock is smaller and, thus, effective market capitalization is lower, which in turn reduces the liquidity of the stock.

In this sense, the previous arguments suggest that blockholder ownership affects market liquidity. These arguments are also reinforced by the work of Heflin and Shaw (2000). The authors argue that in a firm with a concentrated ownership structure, the large shareholders have access to private information, and therefore, their trading increases the adverse selection risk faced by market makers. Thus, investors are forced to increase the bid-ask spreads for this stock and trade less, which reduces the liquidity of the stock (*e.g.* Glosten and Milgrom, 1985; Easley and O'Hara, 1987, 1992).

Both Bolton and Von Thadden (1998) and Heflin and Shaw (2000) imply that ownership dispersion affects other aspects of liquidity. Bolton and Von Thadden (1998) argue that the effective market capitalization is higher for firms with more trading shareholders and this fact also implies a positive relation between the number of shareholders and trading volume. The arguments in Heflin and Shaw (2000) suggest that investors increase spreads for higher blockholder ownership because of higher probability of informed trading. This also implies a negative relationship between blockholder ownership and trading volume because higher spreads discourage trading.

Recently, Jacoby and Zheng (2010) examine the relation between ownership dispersion and market liquidity of stocks. They found that their ownership concentration variables have an adverse impact on trading volume. Overall, the results of their work supported the notion that a dispersed ownership structure improves market liquidity.

-Board Structure

The relation between the board structure and information asymmetry have been done through the corporate disclosure A considerable number of prior research indicates that boards that do a more efficient task of monitoring management improve the quality and the frequency of information released by management (Klein, 2002; Ajinkya *et al*., 2005; Karamanou and Vafeas, 2005). These information releases include not only actual reported earnings but also voluntary disclosures such as management forecasts and other kinds of information. Diamond (1985) and Verrecchia (2001) demonstrate that increased disclosure reduces the incentive for private information search. This suggests that information asymmetry, on average, is lower for firms whose boards are more effective.

The works of Ajinkya *et al*. (2005) and Karamanou and Vafeas (2005) focus on the impact of board structure on both the quality and quantity of corporate information disclosures. Both studies reported that companies with more effective boards issued more frequent earnings forecasts and that these forecasts were more accurate. In this sense, higher board quality should be associated with both more frequent and more accurate earnings forecasts and lower information asymmetry around earnings announcements.

Other studies considered the relationship between board quality and investor perception of reported earnings. Vafeas (2000) finds that earnings are more informative for companies with more effective boards, while Dey (2006) reports that earnings credibility increases with board quality. These findings suggest that higher corporate governance quality should be associated with less information asymmetry.

Kanagaretnam *et al.* (2007) examine the relationship between the quality of corporate governance and information asymmetry in the equity market around quarterly earnings announcements. The authors use the change in market liquidity around the announcements as a proxy for information asymmetry and analysed the board independence, the board structure and the board activity. The results demonstrate that average spread decreases significantly with board independence, board activity, and the percentage stock holdings of directors and officers. Their results were consistent with their hypotheses and suggested that good corporate governance reduces information asymmetry around quarterly earnings announcements. According to the authors, the quality of corporate governance ''*levels the playing field''* for all investors around what is arguably the most significant corporate information event.

Finally, companies which disclose less information are also more likely to manage earnings (Lobo and Zhou, 2001). Richardson (2000) demonstrates that there is a positive relationship between information asymmetry and the level of earnings management. It follows that higher board quality should reduce the level of earnings management and thereby lower information asymmetry.

2.4.4 Disclosure quality and information asymmetry

Literature provides, essentially, two potential mechanisms through which disclosure quality was expected to reduce information asymmetry: by altering the trading incentives of informed and uninformed investors so that there is relatively less trading by privately

informed investors; and by reducing the likelihood that investors discover and trade on private information (Brown and Hillegeist, 2007).

In relation to the first mechanism, Merton (1987) argues that investors are more likely to invest and trade in firms that are well known or that they judge favourably. If higher disclosure quality increases a firm's visibility and/or reduces the costs of processing firm specific public information, then higher disclosure quality will induce more trading in firm's stock by uninformed investors. Also Fishman and Hagerty (1989) use a similar argument. So, quality will be associated with relatively less informed trading, which in turn will reduce information asymmetry.

To Brown and Hillegeist (2007: 444) the presence of information asymmetry creates "*an adverse selection problem in the market when privately informed investors trade on the basis of their private information*". In this sense, there is the risk that an uninformed investor will trade against a privately-informed investor. For the authors a firm's choice of disclosure quality affects this information risk by altering the distribution of public and private information among investors.

In relation to the second mechanism, Verrecchia (1982) examines a setting where public information disclosed by the firm is a perfect substitute for private information. He shows that the amount of costly private information that investors choose to acquire is generally decreasing in the amount of firm-disclosed public information. Diamond (1985) also finds that the incentives for investors to acquire private information are reduced when firms disclose information publicly. Gelb and Zarowin (2002) and Lundholm and Myers (2002)

find that current stock returns reflect more information about future earnings when disclosure quality is higher. Also Brown and Hillegeist (2007) state that firms with high disclosure quality are more likely to publicly release material information promptly and provide forward-looking information. As such, the authors argue that higher disclosure quality reduces private information search incentives and that more informativeness disclosures reduce the total set of information about future earnings that can be privately discovered about a firm. Since there is less information available to be discovered, in addition to the reduced search incentives, the authors expect that the frequency of private information events will be declining in disclosure quality.

Admati (1985) , Wang (1993), Dow and Gorton (1995) and Easley and O'Hara (2004) all model the activities of informed and uninformed traders, and they found that, because of the different degree of available information, informed traders and uninformed traders invest in different portfolios. Specifically, informed traders construct their portfolios on the efficient frontier associated with their superior information. Since uninformed traders have inferior information, they cannot "*replicate*" the informed traders' portfolios, thus their portfolios will always locate below the informed traders' efficient frontier. As selective disclosure causes information asymmetry, it makes informed traders better at the expense of uninformed traders.

The framework developed by Easley and O'Hara (2004) consider both public information and private information together. They provide an analytical model to demonstrate how a firm's information structure affects its capital market behaviour. Their findings suggest that for stocks with more private information and less public information, uninformed

investors require a higher rate of return as compensation because more private information increases information asymmetry and the information risk uninformed investors face.

Finally, and in addition to disclosure's effect on information asymmetry, the previous arguments also show that the level of information asymmetry is likely to influence the firm's choice of disclosure quality, because the firm may choose a higher level of disclosure quality when the current level of information asymmetry is high.

2.4.5 Measures of information asymmetry

2.4.5.1 The bid-ask spread and trading volume

The literature indicates that bid-ask spread is commonly used as a proxy to measure information asymmetry. "*Bid-ask spread is the difference between bid price a dealer is willing to pay for a security and the higher ask price at which the dealer is willing to sell the security*" (Almutari, *et al.,* 2009: 602).

In this sense, the bid-ask spread is a measure of the liquidity degree of firms' securities which was proposed by Demsetz (1968). The bid-ask spread addresses the adverse selection problem that arises from transacting in firm shares in the presence of asymmetrically informed investors. Less information asymmetry implies less adverse selection, which implies in turn a smaller bid-ask spread (Leuz and Verrecchia, 2000).

Welker (1995: 803) suggests the bid-ask spread as a measure of market liquidity, because it provides a direct measure of the price protection that uninformed market participants demand as compensation for the perceived information risk associated with trading in equity markets. According to the author, "*if corporate disclosure policy is indeed effective in mitigating adverse selection, then the empirical prediction is that the bid-ask spread, which decreases in a liquid market, will be negatively related to disclosure policy*". Also to Stoll (2000) an important dimension of stock liquidity is the bid–ask spread. Attig *et al.* (2006), studying the effects of large shareholding on information asymmetry and stock liquidity, computed a measure of stock liquidity and information asymmetry. According to the authors, liquidity is maximal when traders can transact without a time delay or price concession. They use as a measure of stock liquidity the average of daily closing bid–ask spreads.

Leuz and Verrecchia (2000: 91) examine the relation between disclosure, information asymmetry and the cost of capital. According to the authors "*a firm's commitment to greater disclosure should lower cost of capital that arise from information asymmetries*". These authors suggest the bid-ask spread and the turnover ratio as two complementary for information asymmetry. The trading volume is an alternative proxy for adverse selection but, according to the authors, less explicit. Trading volume is a measure of liquidity and captures the willingness of some investors who hold firm shares to sell and the willingness of others to buy. This willingness to transact in firm shares should be inversely related to the existence of information asymmetries. Despite this, the authors recognize that the trading volume can be influenced by a host of other factors unrelated to information. These factors include portfolio rebalancing, changes in risk preferences, among others. There is,

however, some empirical evidence supporting the authors' choice of trading volume as an inverse proxy for information asymmetry. Easley *et al.* (1996), for example, show that the probability of information-based trading is decreasing in trading volume.

More recently, Petersen and Plenborg (2006) find that the turnover ratio increases with the level of disclosure and that the bid-ask spread decreases with the level of disclosure. To the authors, both the bid-ask spread and turnover ratio seem to be appropriate measures for information asymmetry. Also Espinosa *et al.* (2008) find that more transparency reduces the bid-ask spread.

2.4.5.2 Other measures used as proxies of information asymmetry

Share price volatility has been used by prior studies as a proxy for information asymmetry (*e.g.* Lang and Lundholm, 1993). According to Leuz and Verrecchia (2000: 99) "*to the extent that smooth transitions in share prices suggest the absence of information asymmetries between the firm and shareholders, or among investors, low levels of volatility suggest fewer information asymmetries*". However, volatility is also influenced by many factors unrelated to information asymmetry. Moreover, Bushee and Noe (2000) demonstrate that the effect of disclosure on volatility is complex and may depend on the type of investors attracted to the firm. In this sense, Leuz and Verrecchia (2000) assume that, as a measure of information asymmetry, volatility is likely to be least reliable.

Some authors use insider trading profits as a proxy for information asymmetry. According to Frankel and Li (2004: 232) "*insiders' profit, when they trade on value-relevant information before public disclosure leads to its full incorporation into stock prices*". Thus, insider trading profits are related to the degree of information asymmetry between managers and outside investors. Intuitively, insider trading profit should be zero if market participants have the same information as managers.

Kyle (1985) demonstrates that insider profits increase in insiders' information advantage. Baiman and Verrecchia (1996) show that insider profits decrease as public information becomes more precise. Their model explicitly links disclosure incentives, information asymmetry and insider trading profits.

However, Frankel and Li (2004) argue that Kyle's model does not fully capture market characteristics that limit insider profits. They give as an example, the fact that uninformed traders, aware of information asymmetry, may limit their losses. According to Admati and Pfleiderer (1988) uninformed traders are likely to alter their trading behaviour, or in extreme, as stated by Merton (1987), leave the market. Uninformed traders can also respond to information asymmetry by gathering information either themselves or via intermediaries. For example Barth *et al*. (2001) suggest that high information asymmetry makes private information acquisition more profitable. Although, Grossman and Stiglitz (1980) and Verrecchia (1982) state that the incentive to gather information reduce the profits of information gathering so, in equilibrium, the degree of information asymmetry and the amount of information gathering are such that information gatherers earn only a

normal rate of return on their activities. Holden and Subrahmanyam (1992) find that competition among insiders also reduces the profitability of their trades.

Other actions limit the profits of insiders with superior private information, aside from private information acquisition and trader competition, such as corporate policies or governmental regulations because it can restrict inside trades. The literature presents numerous factors that can affect manager's ability to garner profits from private information. Nonetheless, some previous studies found that insider trades are profitable. For example, the work of Seyhun (1986, 1992) and the work of Rozeff and Zaman (1988) show that insiders earn abnormal returns.

In the following point we will address the development of governance and disclosure rules for the cases of the countries under study, Portugal and Spain.

2.5 The development of governance and disclosure rules: the cases of Portugal and Spain

The law and the regulation of a country can represent a potential obstacle to the exercise of the discretional power of managers and to the expropriation by control shareholders, given the possibility to regulate the transactions involving conflicts of interests (Djankov *et al.*, 2008). In the following points we will approach the development of the corporate codes, the implementation of the international financial reporting standards and the main corporate governance recommendations for the countries under study.

2.5.1 The corporate governance codes

Following Câmara (2003), we should start by enhancing the pioneer role of the North American contributions. The *Committee on Corporate Laws* of *American Bar Association* disclosed in 1954 the first *Model Business Corporation Act*, for the Federal States to use as reference at a time when the corporative laws were being updated. More significant in the perspective of governance, they would become the *Principles of Corporate Governance* elaborated by the *American Law Institute*. In this document there are, as recommendations, guidelines regarding the internal organisation of administration. The objective to reinforce the North American market confidence took various steps, such as the publication of Sarbanes Oxley Act, in 2002, with important reforms in the practices of information disclosure, managers' compensations and supervision.

The problems of *corporate governance* were imported to Europe through the United Kingdom. The feeling of scepticism towards the credibility of the listed companies' financial reports in London, which was related to the bankruptcy of some of them, encouraged the *London Stock Exchange*, the *Financial Reporting Council* (private entity responsible for the accounting standards) and the sector of accounting professionals to promote, at the beginning of the 90's, the constitution of a commission, led by Sir Adrian Cadbury, on the financial aspects of corporate governance. This commission was expected to gather proposals of good practices on governance, aiming at recovering the confidence in companies' financial information and therefore preserve the reputation of the British financial market. The Committee on the Financial Aspects of Corporate Governance published the final product which became popular with "*Cadbury* Report" (Cadbury Committee Report, 1992). This document included a *Code of Best Practice* destined to listed companies in the United Kingdom, which condensed the fundamental good practices according to the Cadbury committee (Câmara, 2003).

Indeed, in the 90's, the codes of governance had a vigorous expression in Europe. This international extension of the debate was largely caused by the *Principles of OCDE on Corporate Governance*. Approved in 1999, they demonstrated that the imperfections of corporate governance could have a negative impact on the world economy. Although they were not binding for the adhering states, the *Principles* contained, in a flexible formulation, indications directed to the states to introduce legal adjustments regarding the mechanisms of corporate governance.

According to Franks and Mayer (1994) the differences in corporate governance models between countries occur mainly because of the way in which ownership and control are organized. Two main models are distinguished: the Anglo-Saxon model, which is typical in Anglo-Saxon countries and is known as the shareholder model; and the Continental European model, which adopts the characteristics of German and Latin countries and is known as the stakeholder model. Anglo-Saxon countries have a low concentration of shareholders and liquid capital market whereas in Continental Europe fewer companies are publicly trade and shareholder groups hold large percentages of the total number of shares that are publicly traded.

Following the European context, it was during the 90's that the problem inherent to corporate governance also emerged in Portugal and Spain, following efforts deployed by leading organisms linked to the functioning of financial markets. In the case of Portugal, the lead was played by the Portuguese Securities Market Commission (CMVM). This commission is represented in the major international financial and accounting bodies and entities such as International Organization of Securities Commissions (IOSCO), the Organization for Economic Co-operation and Development (OECD) and the European Union (EU).

Among the different participations of the CMVM, should be underlined the participation in the drafting of the principles that the OECD adopted in May 1999, in collaboration with other officials entities of various countries in its membership. In the document "*OECD – Principles of Corporate Governance*" were established the guiding principals for the different country members to do the evaluation of the legal, regulatory and institutional

mechanisms existing at the domestic level, as well as promoting of more appropriate measures to improve the corporate governance.

By virtue of the increased importance of international concerns relating to corporate governance, the CMVM (1999) approved a set of "*Recommendations on Corporate Governance*". In this document, the CMVM sets the theme of corporate governance as the system of rules and conduct on the exercise of direction and control of listed companies. This document establishes a set of 17 recommendations that must be followed by companies with listed shares and by institutional investors.

As a result of criticisms to the first document on corporate governance, in 2001 it was replaced by the "*CMVM Regulation nº 07/2001 - Corporate Governance*", which is largely based on the document issued in 1999. The purpose of this new document was to increase the maximum transparency of information provided by companies. The way to materialize the increase of maximum transparency was through mandatory disclosure practices relating to corporate governance when previously there was only a recommendation. The country has continued to regularly improve its legislative framework through a process of bi-annual amendments. In a 2007 update, the Recommendations were renamed the "*CMVM Code of Corporate Governance*".

In February 2006 emerges the White Paper on Corporate Governance, published by Portuguese Institute of Corporate Governance (IPCG, 2006). It is also worth noting that, in the Portuguese case, the large changes introduced by the Law-Decree nº 76-A/2006, 29th March, in the Commercial Companies Code (*Código das Sociedades Comerciais*).

According to Câmara *et al*. (2008) the Portuguese law before then was aware of the problems related to the management and supervision of companies, but in 2006 the corporate governance is for the first time recognised as principal object of a legal reform.

Spanish corporate governance code has traditionally been characterized by general principles of law set forth in the Spanish Commercial Code (Código de Comercio). To improve the corporate governance rules, the Spanish government chose, like many other countries, the adoption of reports, done by academics and professionals: the *Olivencia* Code (and *Report*) (1998) and the *Aldama Report* (2003).

In 1997 the Spanish government created a commission of experts (*Olivencia Commission*) to draft a code of ethics for the board of directors of companies. The commission submitted the report (*Report Olivencia*) and the code of ethics in February of 1998 (the *Code of Good Governance*, also known as the *Olivencia Code).*

In July of 2002, the Government created a commission giving them the task of analyzing the necessary means to promote transparency and security in the financial market: the *Aldama Commission*. This commission submitted its final report in January 2003. This *Aldama Report* continued on the same line as the *Olivencia* commission, although there were some differences, such as: due to the fact that the information that companies disseminate into the market was insufficient, it was necessary to dictate standards that would require the companies to publish an Annual Report of the Corporate Governance in a predetermined format; and the need to have a legislation that, in a more effective way, regulates the duties of the directors.

One of the fundamental elements of the Spanish reform, referring to listed companies, has been the increase in the disclosure of the companies. The origin of this reform can be traced back to the recommendations proposed by the *Olivencia* and *Aldama Reports*, which particularly insisted on this issue. The modifications in this field are also related with the fact that the government of Spain aproved the Law on Transparency of Listed Companies nº 26 of 2003, modifying the Securities Market Law nº 24 of 1988. This modification was seen as a further step to protect minority shareholders and strengthen corporate governance. It has established the requirement of drawing up an annual report of the corporate governance and the requirement of transmitting shareholder information through the company website.

The co-existence of two good governance texts – the Olivencia Code and the Aldama Report – complicated the task of compliance with their recommendations. On May 2006, the Special Working Group on the Good Governance of Listed Companies concluded its deliberations with the approval of a single document consolidating corporate governance recommendations, the "*Unified Good Governance Code*" (CNMV, 2006). The Unified Code, applicable from 2007 onwards, provided a common yardstick for the good governance practices of all listed firms.

The article 116 of the Securities Markets Law requires that all companies publish an Annual Corporate Governance Report and disclose it as price sensitive information. This report must "*provide comprehensive and reasoned information on listed companies' corporate governance structures and practices, enabling investors and other users a founded judgement on the same*" (CNMV, 2008: 15). Spanish legislation leaves it up to

each company to decide whether or not to follow the recommendations of the Unified Code, but requires them to give a reasonable explanation for any departure from the same.

The corporate governance codes of Portugal and Spain are adopted at national level, but the European Union directives also promote their application by requiring that listed companies refer in their corporate governance statement to a code and that they report on their application of that code on a '*comply or explain*' basis.

Both countries developed studies with the purpose of analyse the degrees of compliance with the governance codes. In 2008, the CMVM carried out a questionnaire regarding the governance of the Portuguese listed companies. Besides the questionnaire, were analysed the reports of corporate governance for the year ended on the 31st of December of 2007. The main conclusions presented in this report were that Portuguese companies have, in general, a limited dispersal of its share capital, combined with a high stability of its capital structure, in many companies the share capital is highly concentrated and the proportion of independent directors is still reduced.

Regarding the compliance of the CMVM recommendations on corporate governance, the document states that the average overall degree of fulfilment of these recommendations amounted to 62,5% in 2007, a figure that is higher than the 59,1% recorded in 2006. Although slight, this growth is the visible mark of the effort the Portuguese issuers have shown in order to adapt their structures of corporate governance to the best international practices. Although improvements are detected in the governance practices established in Portuguese firms, the study still detects multiple aspects that seem far from the "*good*

governance rules", with the need for shareholders to reflect on the reasons for these differences and conclude if the mechanisms established are in fact best suited to their company (CMVM, 2008: 112).

Also in 2008 the Spanish Securities Market Commission (*Comisión Nacional del Mercado de Valores* - CNMV) presented in the "*Corporate Governance Report of Entities with Securities Admitted to Trading on Regulated Markets 2007*" the main conclusions of the review of the *Annual Corporate Governance Report of* 174 Spanish listed companies, indicating degrees of compliance with the Code's recommendations. According to the results presented by CNMV, the Annual Corporate Governance Report transparency and compliance were within the realms of acceptable. Listed companies abide in full by an average 75,1% of Code recommendations and are partly compliant with a further 10,2% of those applicable to their circumstances. On aggregate, this leaves 14,7% of recommendations which are not being applied. Compliance is significantly greater among the companies with the largest market capitalization. Furthermore, the conclusions of the CNMV (2008) report reinforce the high ownership concentration of Spanish listed companies.

From the analysis of the Annual Corporate Governance reports, CNMV concluded that *"it is clear that companies have made great efforts to accurately reflect their degree of compliance with Code recommendations and to explain those cases where they depart from or only partially fulfil them*". (CNMV, 2008: 21)

Despite this, and considering the recent impact of the financial crisis, it seems consensual that the corporate governance, until now usually based on self-regulation, was not as effective as it could have been. On April 2011, the European Union Commission launched a public consultation on possible ways forward to improve existing corporate governance mechanisms. According to the European Union Commission, the objective of this *Green Paper* is to have a broad debate on the ways in which corporate governance of European companies can be improved, namely on issues such as *"how to improve the diversity and functioning of the boards of directors and the monitoring and enforcement of existing national corporate governance codes, and how to enhance the engagement of shareholders"* (European Commission, 2011).

2.5.2 International Financial Reporting Standards

Over the last few years the adoption of International Financial Reporting Standards (IFRS) has become a very relevant issue for researchers, practitioners and regulators. In Europe, all listed firms are required to report consolidated financial statements prepared according to IFRS since 2005. Recent research seems to support that this adoption of IFRS has improved financial reporting (*e.g.* Barth *et al*., 2005). Ball *et al*. (2005) point as immediate advantages the uniformity of the accounting standards and the elimination of informational externalities that arise from the lack of comparability. Otherwise, to Major and Marques (2008), the IFRS are much more directed to the investor.

In the case of Portugal, primarily the Portuguese Generally Accepted Accounting Principles (GAAP) were derived from the following rules in the given order of priority: (1)

the Portuguese Accounting Plan (POC); (2) the Accounting Directives issued by the Portuguese Accounting Standards Board (CNC); and (3) the International Accounting Standards Board (IASB) pronouncements in the absence of national rules and guidelines. However, a 2009 PricewaterhouseCoopers (PwC) report entitled "*Adoption of the System of International Accounting Standards*" explains that it was widely felt that the POC was no longer sufficient to meet increasingly demanding international reporting requirements and that this situation was putting Portuguese companies at a competitive disadvantage.

The European Commission (EC) Regulation nº.1606/ 2002 (European Commission, 2002) lead to the Portuguese Decree-Law nº. 35/2005. Portuguese listed companies must apply the IFRS as endorsed by the EC in the preparation of their consolidated accounts. Unlisted companies are also permitted to apply IFRS in their consolidated and annual accounts except for unlisted banks and financial institutions, which are mandated to apply IFRS in their consolidated accounts since 2005. Finally, Portuguese companies that do not apply IFRS, follow national generally accepted accounting principles (GAAP) primarily contained in a newly established Accounting Standards System (SNC). The SNC was put in place in January 2010.

In relation to Spain, in line with the European Commission Regulation nº. 1606/2002, since January 1, 2005 listed companies in Spain have been required to prepare consolidated accounts following IFRS as endorsed by the EU. In addition, according to a 2008 European Commission report (European Commission, 2008) on the implementation of the directive, Spain opted for the extended use of IFRS allowing unlisted groups to apply either Spanish GAAP or IFRS. Financial institutions are required to follow the rules set by the Central

Bank of Spain, which are in conformity with the EU-based IFRS. Other companies must follow Spanish GAAP which, according to a PricewaterhouseCoopers (PwC) 2010 publication, was revised as a result of corporate and accounting law reforms in 2006 effective for application by individual companies and unlisted consolidated groups since 2008.

2.5.3 Corporate Governance recommendations

The development of the recommendations and legislation on corporate governance in Spain after the 1998 Olivencia Report has required Spanish listed companies to make a great effort to adjust their structures and policies.

Vives (2007) analysed the 2006 annual corporate governance reports published by the IBEX-35[18] companies. The author concluded that over 95% disclosed their corporate governance structures in the annual report in sufficient terms for the market to be able to evaluate their practices correctly. To the author this is remarkable because one of the key features in any corporate governance system is the transparency of the practices followed.

In May 2006, Spain approved the Unified Corporate Governance Code, which listed companies must use as a reference in the corporate governance annual reports regarding fiscal year 2007. The main objective when preparing the Unified Code was to draw up a document (i) to unify the recommendations of the Olivencia Report (1998) and the Aldama Report (2003) and (ii) to bring their recommendations in line with the new international

[18] The IBEX-35 is a stock index formed by the 35 more representative Spanish listed companies.

trends. The new document shares in the growing harmonization of the recommendations of neighbour countries as a consequence of the development of corporate governance codes within the OECD and the European Union. The main feature of the Unified Code is that it maintains the *comply or explain* principle, which gives a specific definition of independent directors[19] for company evaluation. The Unified Code particularly refers to the following aspects, presented in table 2.8.

Table 2.8 - Main aspects of Spanish Unified Corporate Governance Code

(i)	The role of the shareholders' meeting, as the decision-making body, in transactions that involve a structural change in the company;
(ii)	the recommendation for companies not to include restrictions in their by-laws that hinder the control of companies;
(iii)	the assumption that the board, as the core of its duties, have the responsibility for approving the general policies and strategies of the company, related-party transactions and relevant investments or transactions;
(iv)	the board should have a wide majority of non-executive directors and that independent directors should represent, at least, one third of the directors, with a diversity of gender;
(v)	instruments should be provided to avoid the concentration of powers in the chairman;
(vi)	the boards of directors, the audit committee and the remunerations committee should have a majority of non-executive directors[20] and be presided over by independent directors, reinforcing their duties; and
(vii)	the greater remuneration transparency should be achieved, recommending that a report on the remuneration policy should be submitted to the shareholders' meeting, for purposes of consultation, and that the financial statements should record the individual remuneration of each director.

Adapted from Vives (2007)

[19] The Unified Code (CNMV, 2006: 48) defines independent directors as "*directors appointed for their personal or professional qualities who are in a position to perform their duties without being influenced by any connection with the company, its shareholders or its managers*". Following this definition, the Unified Code describes the circumstances where a director can not be qualified as independent (CNMV, 2006: 48-49).

[20] The Spanish Unified Code maintains the distinction between internal (executive) and external (proprietary and independent) directors (CNMV, 2008:37).

In Portugal firms' official structure of governance can follow only one of the alternatives described in the corporate law (*Código das Sociedades Comerciais*). The recommendations about good governance practices are made public by the CMVM. In 1999 the CMVM elaborated its first package of recommendations regarding corporate governance. Two years later, it issued Regulation nº. 7/2001, which brought significant changes to the national corporate governance settings, as it required the transparency of ownership structures and determined that listed firms, from then on, had to disclose their degree of compliance with the recommendations, in a "*comply or explain*" mode. Thus, firms either make the suggested disclosures in their annual reports (comply) or they need to justify their deviation from the recommendation (explain). In 2003, although maintaining the fundamental aspects of Regulation 7/2001, in particular the *comply or explain* viewpoint, a further update was published, so as to make the annual report on corporate governance more complete. In 2005, the dominant tone of the amendments introduced was related to the improvement of the internal control systems of companies (CMVM, 2005). Table 2.9 summarizes CMVM recommendations into four main topics.

Table 2.9 - Main aspects of Portuguese CMVM recommendations

(i)	The first one is the disclosure of information and includes recommendation 1, which says that firms should have an investor support office to ensure equality among shareholders in terms of access to information.
(ii)	The second one respects to the exercise of voting rights and representation rights by shareholders, in which there is the recommendation 2. It states that the exercise of voting rights directly, by post or by representation, should not be restricted.
(iii)	The third field leads with corporate rules, and encloses recommendation 3 and 4. Thus, it is recommended that firms have an internal control system to detect risks inherent to their activity. Recommendation 4 is an anti-takeover measure that concerns to the transferability of shares and states that the measures adopted to prevent the success of takeover bids should respect the interests of the company and its shareholders.

(iv)	The fourth field respects to the effective monitoring of the board of directors' function. Thus, recommendation 5 states that the board should be composed by a plurality of people who provide effective guidance for the management of the company, and 5-A was after added to advise to include a sufficient number of non-executive directors[21]. Number 6 refers to the inclusion of a sufficient quantity of independent[22] administrators in the nonexecutive members. Recommendation number 7 advises for the creation of internal audit committees, with power to assess the corporate structure and its governance. Recommendation 8 states the definition of the board members' remuneration in line with the company and its annually individual disclosure. Recommendation 8-A was therefore added to advise for the submission to the shareholders of a declaration on the board's remunerating policy. The recommendation 9 regards the committee independence, advising that members of the remuneration committee should be independent as regards of the board of directors. Recommendation 10 counsels for the approval by shareholders of a plan of shares and/or options to members of the board and/or employees. Recommendation 10-A accounts for a communication and reporting policy over alleged irregularities.

Adapted from Major and Marques (2008)

In September of 2007, a new list of recommendations was made public by the CMVM. The current version of these set of recommendations is now known as "CMVM Corporate Governance Code". According to the CMVM, the progress that has been achieved in the

[21] The members of the administrative board do not have to be all "*executive*" (...). The Code of Corporate Governance recommends the inclusion of non-executive administrators for the "*supervision, auditing and evaluation of the activity of the executive members*" (Abreu *et al*., 2010: 19).

[22] CMVM felt the need for defining a clear and objective concept for independent director and in its Regulation nº 11/2003 (CMVM, 2003), article 1, it defines that "*administrators associated with specific interest groups in the company shall not be considered independent officers, namely: a) Members of the board of directors who are also members of the board of directors of the controlling company, as set forth in the Portuguese Securities Code; b) Members of the board of directors who are holders of qualified holdings in an amount equal to or larger than 10% of the share capital or of the voting rights in the company, or an identical percentage in a controlling company, as set forth in the Portuguese Securities Code; c) Members of the board of directors who hold management position or have contractual ties with a competing company; d) Members of the board of directors who receive compensation from the company, or from any parent company or affiliates within the same group other than in the form of compensation for their role as corporate officers; e) Members of the board of directors who are spouses, family or direct kin through third lineage, including those persons referred to in the paragraphs above. In addition to checking the circumstances described above, the board must ensure, in a well founded manner, the independence of the directors in light of other pertinent circumstances*".

contents of these recommendations has originated from amendments made to the regulatory framework of the public governance format under Decree-Law nº. 76-A/2006 of 29 March. In this new list, recommendations are organised under three topics: (i) general shareholders' meetings, (ii) boards and committees and (iii) information and auditing. Overall, there are 16 recommendations and many of them have several points. An interesting issue is that in the introduction to the new code's recommendations it is stated that the recommendations can be followed by non listed firms.

2.6 Conclusion

In this chapter we began by conducting a general review of the concept of corporate governance and its most important attributes. The agency problem was also analysed, with emphasis on internal and external mechanisms for controlling agency costs. Within theses mechanisms, we highlighted the disclosure policy, focusing primarily on a literature about the voluntary disclosure of information. Following this, we analysed the previous investigation about the relation between the governance rules, voluntary disclosure and information asymmetry. Finally, we summarized the main aspects related with the development of the governance and disclosure rules in Portugal and in Spain.

With the above literature review it became clear that, because capital markets are becoming increasingly global and integrated, organizations have to adopt mechanisms of corporate governance that are more or less standard, based on two main pillars: transparency and accountability to shareholders. In addition, these mechanisms promote

the balance of power among stakeholders and are vital to ensure the strong development of the organization.

Corporate governance involves a vast number of aspects, making the attribution of one unique definition impossible. Nevertheless, all the definitions refer to the existence of conflicts of interest between insiders and outsiders, with an emphasis on those arising from the separation of ownership and control (Jensen and Meckling, 1976). Furthermore, there is a consensus regarding the assumption that the corporate governance problem cannot be satisfactorily resolved by complete contracting because of significant uncertainty, information asymmetries and contracting costs in the relationship between capital providers and insiders (Grossman and Hart, 1986; Hart and Moore, 1990; Hart, 1995). Finally, the governance of each company should contemplate the mechanisms that lead to an efficient allocation/production/development of resources.

Several external and internal controlling mechanisms have been addressed in the literature. An increasing number of studies have been recognising the simultaneous nature of many of the corporate governance mechanisms, suggesting that single-handed interventions on a particular mechanism may not be feasible or effective. In this sense, the set of mechanisms has to be defined in accordance with the context that surrounds the organization (Dey, 2008).

The companies' disclosure policy is one of the internal mechanisms of construction of the public perception of corporate governance quality and also a way to ensure the efficient functioning of capital markets by reducing the information asymmetry. The existence of

information asymmetry between *insiders* and *outsiders* of companies generates agency costs that should be minimised. The agency theory assumes the existence of agency costs arising from the contractual relationship between parties. The signalling theory predicts that managers of higher quality companies are encouraged to transmit to the market the information supplements they possess, thus contributing to the reduction of agency costs and obtaining finance on more favourable terms. On the other hand, according to legitimacy theory, companies use the disclosure to communicate with their stakeholders, informing them that they are complying with the terms of the social contract. However, we must consider that disclosure may increase, among others, the proprietary costs associated with the disclosure of valuable information to competitors. So, companies need to consider a variety of costs and benefits associated with disclosure. However, the costs and benefits to disclosure vary across companies. In this sense, their disclosure policy will be formulated with reference to the overall marginal costs and marginal benefits (Donnelly and Mulcahy, 2008)

Nevertheless, a strong system of information dissemination is recognized to be a key feature of the surveillance of the organizations by the markets and it's fundamental to enabling shareholders to exercise their rights. The studies, especially those that have been made in countries with stock markets of high liquidity and size, show that the dissemination of information can have a powerful influence on the behaviour of the listed organizations and investor protection. A demanding system of disclosure of information encourages the inflow of new investment and ensures confidence in capital markets. Insufficient or unclear information may hinder the ability of the functioning of markets

because of information asymmetries between players which might imply a misallocation of resources.

The law and the regulation of a country are a potential obstacle to the exercise of the discretional power of managers and to the expropriation by control shareholders, given the possibility to regulate the transactions involving conflicts of interests (Djankov *et al.*, 2008). In this sense, governance and disclosure rules or recommendations, given their contents and features, should be continuously developed to achieve their best possible adaptation to corporate and market realities.

Chapter 3 - Research model

3.1 Introduction

After revising the literature, this chapter presents the proposed model of investigation. We intend to examine the corporate governance determinants of voluntary disclosure and its impact on the reduction of information asymmetry for the Iberian Peninsula listed companies.

In our study we will proceed to the test of two groups of hypotheses. The first group presented will aim to study the determinants of voluntary corporate disclosure, using the multiple regression methodology. The second group will be tested using the methodology of structural equation models. We intend to study the direct and indirect relations between governance rules and information asymmetry, through the voluntary disclosure of information and the organizational performance,

Thus, this chapter presents the two sets of research hypotheses to be tested and the reasoning that led to its formulation. For each hypothesis we will summarize the main arguments found in the literature.

3.2 Research hypotheses

3.2.1 The corporate governance determinants of voluntary disclosure

Our first group of hypotheses, tested through multiple regression models, will allow us to draw conclusions about the determinants of voluntary disclosure. On the corporate governance side, and as described previously, most of the research focuses on ownership structure and board structure (in a broad sense, governance rules). Researchers using ownership structure as measurement proxies focused mainly on management ownership, large shareholder ownership, institutional ownership, government ownership and family-controlled firms. While researchers using board composition as measurement proxies focus on the proportion of independent and non-executive directors on the board, the board size, CEO duality/dominant personalities, the existence of board committees, management compensation, external auditor type, percentage of family members on the board. Previous studies have also examined how general corporate characteristics influence the firm's level of voluntary disclosure of information. These characteristics are commonly included in the studies of voluntary disclosure and are often used as controlling variables.

We are conscious of the impossibility of inclusion of all variables that potentially influence the level of voluntary disclosure by Iberian Peninsula listed companies. So, following the work of Eng and Mak (2003), we will examine the impact of three attributes of ownership structure on voluntary disclosure: managerial ownership, government ownership and large

shareholder ownership[23]. In relation to directors' and supervisors' structures we will analyse: the proportion of non-executives and independent members on the board (*e.g.* Arcay and Vázquez, 2005; Patelli and Principe, 2007); the size of the board (*e.g*. Di Pietra *et al*., 2008; Allegrini and Greco, 2011); the existence of monitoring and control structures (*e.g.* Ho and Wong, 2001; Arcay and Vázquez, 2005; Wang *et al.* 2008); the board compensation (*e.g.* Nagar *et al*., 2003; Arcay and Vázquez, 2005); and the board expertise (*e.g.* Klein, 1998; Ashbaugh-Skaife *et al.*, 2006).

We will also analyse the following general corporate characteristics: firm performance (*e.g.* Raffournier, 1995; Ho and Wong, 2001; Eng and Mak, 2003; Petersen and Plenborg, 2006; Wang *et al.* 2008; Baek *et al.* 2009); debt (*e.g.* Wang *et al*. 2008; Allegrini and Greco, 2011); growth opportunities (*e.g.* Eng and Mak, 2003); and size (*e.g*. Meek *et al.*, 1995, Beattie *et al*., 2004; Arcay and Vázquez, 2005; Allegrini and Greco, 2011).

We present for each one of the hypotheses, in a summarized form, the main arguments found in the literature.

[23] Not taking into account the institutional investors follows Abreu's (2010: 18) arguments, which consider the importance of this type of investors in Continental Europe to be far from the one in United Kingdom or in United States of America. Furthermore, for the author *"institutional investors do not seem to be the most capable group to solve the problems of corporate governance (...) taking into consideration that they cannot and/ or do not want to get involved decisively in the administration and control of companies*". Furthermore, we do not consider the family ownership variable because, in general, companies present a considerable ownership concentration. According to Faccio and Lang (2002) most continental European companies present a large and dominant shareholder who exerts considerable control. We chose to analyse this last aspect.

3.2.1.1 Relation between ownership structure and voluntary disclosure

According to Jensen and Meckling (1976) directors' shareholdings constitute a relevant vehicle for monitoring the management, as it tends to restrain managerial incentives to divert resources that may ultimately put at risk the attainment of shareholder value maximization. Directors' shareholdings help to align goals and financial incentives of board members with those of outside shareholders (Bushman *et al*., 2004). Eng and Mak (2003) argue that when managerial ownership is low, there is a greater agency problem, meaning that managers have greater incentives to consume shareholders wealth, and reduced incentives to maximize organizational performance. Hence, outside shareholders will increase monitoring of manager's behaviour to reduce the agency problem (Jensen and Meckling, 1976). Eng and Mak (2003) also argue that monitoring by outside shareholders increases costs of the firm. However, monitoring by outside shareholders may be reduced if managers can provide voluntary disclosure. That is, voluntary disclosure is a substitute for monitoring.

Empirical evidence in Ruland *et al.* (1990) work shows that managerial ownership to be negatively related to voluntary disclosure. In cases of low levels of director ownership, the monitoring role of the board is strengthened, which has a positive effect on voluntary corporate disclosure. Gelb (2000) shows that companies with lower levels of managerial ownership are more likely to receive higher ratings for the disclosures provided in their annual and quarterly reports. More recently, Baek *et al.* (2009) find that, for firms with low levels of managerial ownership, there is a negative relationship between the level of managerial ownership and the level of disclosure.

In this context, it's expected that voluntary disclosure increases with decreases in managerial ownership.

H_{1a}: Voluntary disclosure is negatively related to managerial ownership.

The relation between government ownership of private sector firms and disclosure has not been subject of many studies. In a greater number of countries the government has a capital participation in some companies that are of strategic importance to the state. These companies are run like other private commercial enterprises, but may have to look beyond pure profit goals and consider goals related to the interests of the nation. These goals may conflict with the commercial objectives of the enterprise (Mak and Li, 2001). According to Eng and Mak (2003) enhancing shareholder value may not be the primary objective of these companies. Managers are also likely to face less discipline from the market for corporate control because the government is expected to be a long term investor.

Eng and Mak (2003) and Wang *et al.* (2008) find a positive relationship between government ownership and voluntary disclosure. These results are consistent with the argument that government ownership increases moral hazard and agency problems, and disclosure is a mean of mitigating these problems. Because of the government's interest in these companies and the conflicting objectives faced by these firms, there may be a greater need for communication with other shareholders of the firm.

In this context, it's expected that voluntary disclosure increases with increases in government ownership.

H_{1b}: Voluntary disclosure is positively related to government ownership.

According to Raffournier (1995) the ownership structure of a firm may be a possible determinant of organizational disclosure. The presence of a large shareholder may be accompanied by the owner's considerable involvement in the firm's management. Under these circumstances, the demand for information would be very low. On the other hand, in cases of ownership dispersion, investors don't have *first-hand* access to information, and this may lead to increased demands for organizational information that can be used to monitor management (Gelb, 2000). Fama and Jensen (1983) propose that where share ownership is widely held, the potential for conflicts between principal and agent is greater than in more closely held companies. As a result, information disclosure is likely to be greater in widely held firms.

For Lopes and Rodrigues (2007) if a shareholder owns a large stake in a company, the dependence on public disclosure is likely to be smaller, because he can directly monitor management. Furthermore, the ownership structure may have a significant impact on the adoption of rules of good governance which, in turn, will affect corporate disclosure (Arcay and Vázquez, 2005). As suggested by Wymeersch (2002), compliance with the recommendations of codes of good governance is more difficult when a significant proportion of a firm's equity is held by a majority shareholder.

In this context, it's expected that companies with a large shareholder provide less voluntary disclosures.

H_{1c}: Voluntary disclosure is negatively related to with a presence of a large shareholder.

3.2.1.2 Relation between directors' and supervisors' structures and voluntary disclosure

In large companies, shareholders are not involved in the management and control of the company, but delegate such responsibilities to the board of directors to ensure goal similarity between shareholders' interests and management actions. The board's role of administration is particularly relevant in protecting the interests of minority shareholders. Outside non-executive directors are perceived as a tool for monitoring management behaviour (Rosenstein and Wayatt, 1990), resulting in more voluntary disclosure of corporate information. Lefwich *et al.* (1981) and Fama and Jensen (1983) argue that the larger the proportion of independents on the board, the more effective it will be in monitoring management acts, and companies can be expected to have more voluntary disclosures. According to several authors, independent directors are supposed to mitigate the agency conflicts between large controlling shareholders and minority outsider shareholders (Anderson and Reeb, 2004; Park and Shin, 2004; Patelli and Prencipe, 2007).

A non-executive director is defined as a director who is not employed in the company's business activities and whose role is to provide an outsider's contribution and oversight to the board of directors (Hanrahan *et al.,* 2001). A non-executive director who is entirely independent from management is expected to offer shareholders the greatest protection in monitoring management (Baysinger and Butler, 1985). Fama and Jensen (1983) posit that the superior monitoring ability of non-executives can be attributed to the incentive to maintain their reputations in the external labour market. Gregory and Simmelkjaer (2002) argue that the codes of good governance include a number of recommendations, one of them being the appointment of non-executive and independent directors, an inclusion designed to reduce agency conflicts between managers and shareholders.

Chen and Jaggi (2000), Arcay and Vázquez (2005) and Patelli and Principe (2007) empirical results show a positive relation between the proportion of independent directors on the board and the amount of voluntary information disclosed by the companies. The proportion of outside directors on corporate boards was also negatively associated with indicators that measured the (poor) quality of the information disclosed, such as the publication of fraudulent or defective financial statements (Beasley, 1996; Peasnell *et al*., 2001), as well as measures of earnings management (Peasnell *et al*., 2000).

In this context, a positive association is expected between the proportion of non-executives and independents on the board and the extent of voluntary disclosure.

H_{2a}: Voluntary disclosure is positively related to the proportion of non-executives and independents directors on the board.

The board size may influence the level of voluntary disclosure. The level of disclosure is a strategic decision made by the board of directors. According to Allegrini and Greco (2011) an important factor perceived to affect the board effectiveness is the size. The size of the board is believed to affect the ability of the board to monitor and evaluate management.

The codes of good governance usually recommend limitations to the size of the board. By restricting the number of directors, it is believed that the exchange of ideas between board members will be enhanced, as well as flexibility in the decision-making process. Jensen (1993) argues that small boards are more effective in monitoring the CEO and are more difficult for the CEO or the chairman to manipulate. Yermack (1996) shows that firms with smaller boards are valued more highly by the market than other companies with larger boards. Also Vafeas (2000) argues that investors place higher value on earnings information when provided by firms with smaller boards.

However, and because outside directors are considered to be more effective monitors of managers, the literature on board effectiveness also predicts that as the proportion of outside directors on the board increases, firm performance should increase. Some authors argue that larger boards may be beneficial because, for example, they increase the expertise and resources available, namely, to monitor the managers' actions (*e.g.* Dalton *et al.,* 1999). Di Pietra *et al.* (2008) argue that in firms with ownership concentration and high insider shareholders representation in the board, larger boards do not necessarily imply less effective governance structures. A larger board can offer "*more knowledge and expertise, as well as more capacity for monitoring and sharing the workload*" (Larmou and Vafeas, 2010: 62). Allegrini and Greco (2011) show empirically that companies with larger boards

show greater transparency for outside shareholders and, in this sense, could better contribute to mitigate conflicts among insiders and minority outsiders shareholders

In this context, an association between the size of the board and the extent of voluntary disclosure is expected (with no predicting sign).

H_{2b}: Voluntary disclosure is related to the size of the board.

A key role in the board monitoring activities is played by the audit committee (Blue Ribbon Report, 1999). The audit committee operates as a monitoring mechanism to improve the quality of information conveyed to external parties (Pincus *et al*., 1989) and "*oversees the preparation and communication of financial information to third parties to ensure that such data fulfils the requisites of clarity and the completeness of disclosure*" (Smith Report, 2003: 12).

Empirical evidence indicates that voluntary disclosure is positively related to the functioning of an audit committee (*e.g.* Ho and Wong, 2001; Arcay and Vázquez, 2005; Allegrini and Greco, 2011). Furthermore, Dechow *et al*. (1996) and Peasnell *et al.* (2001) observe that audit committees help to reduce the likelihood of accounting fraud. By ensuring objective disclosure, the audit committee allows an accurate assessment of the top management decisions and performance. Dominance of a board by executives and insiders can deter the creation of active and independent audit committees (Klein, 1998; Méndez and García, 2007).

To Méndez and García (2007) audit committees can be defined as boards' delegate committees whose main aim is to guarantee the reliability of the accounting information issued by firms. Their principal task is therefore to evaluate companies' internal audit systems, to safeguard the independence of external auditors and to evaluate and to control the processes of corporate governance, informational transparency and conflicts between shareholders and managers.

In addition to the audit committee, firms can voluntarily establish an internal audit function. Davidson *et al.* (2005) argue that this function can improve the effectiveness of governance procedures. An internal audit function is also expected to facilitate the operation and effective functioning of the audit committee, as the goals of the audit function are closely aligned with the financial reporting oversight responsibilities of the audit committee (Goodwin and Yeo, 2001; Goodwin, 2003).

The signalling literature suggests that the choice of an external auditor can serve as a signal of firm value. Generally, entrepreneurs are likely to choose a large audit firm since such an action signals to investors their acceptance of the auditor's demands for higher quality disclosure as well as the quality of a firm's earnings performance (Datar *et al*., 1991). Several studies argue that the big audit firms risk damage to the value of their reputation if they are associated with clients whose reporting practices are perceived as lower quality. Hence, they encourage clients to disclose more information (Hossain *et al*., 1994; Raffournier, 1995; Chau and Gray, 2002; Camfferman and Cooke, 2002). Wang *et al.* (2008) show that the level of voluntary disclosure is positively related to the reputation of the engaged auditor.

The remuneration committee or the corporate governance commission can also play a positive role in the top management control. The remuneration committee contribute to define the remuneration mechanisms and to align the management's and the shareholders' interests (Main and Johnston, 1993; Conyon and Peck, 1998; Laksmana 2008).

In this sense, the existence of an audit committee, a remuneration committee, an internal audit function, a reputed external auditor and other monitoring and control structures have the function of ensuring the quality of financial accounting and control system. According to Denis (2001: 195) "*they reduce the manager's latitude to act opportunistically and contribute to the alignment of internal and external interest of the organization*". In this context, a positive association is expected between the monitoring and control structures and the extent of voluntary disclosure.

H_{2c}: Voluntary disclosure is positively related with the existence of monitoring and control structures.

Management incentives have the objective of compensating board members by aligning their interest with the firm's performance. According to Jensen and Murphy (1990) and to Tosi and Gomez-Mejia (1989) increases in share price lead to greater compensation for board members. Gutiérrez *et al.* (2000) argue that the linkage of management compensation to performance results is a transfer of risk to management and acts as a deterrent to opportunistic behaviour. Several studies examined the relationship between stock options and disclosure practices. According to Perry (2000) stock option plans for

outside directors increases the monitoring role played by the board and improves firm's value (Fich and Shivdasani, 2005).

Also Nagar *et al.* (2003) argue that general stock-priced-based incentives represent an effective mean of encouraging both good and bad news disclosures. These authors report a positive association between corporate disclosure and the proportion of CEO compensation affected by stock price. Arcay and Vázquez (2005) also find that directors' stock option plans are positively related to voluntary disclosure. The study of Shleifer and Vishny (1997) pointed out that a remuneration contract with a strong benefit plan will cause management's interest to be consistent with those of the investors. As a result, management's actions will work to benefit investors.

In this context, it's expected that voluntary disclosure increases with increases in management incentives.

H_{2d}: Voluntary disclosure is positively related to management incentives.

The literature presents the idea that boards comprising of members who are more competent or knowledgeable will do a better job of monitoring the activities of management and make better decisions. Klein (1998) and Ashbaugh-Skaife *et al.* (2006) measure board competency or expertise by the percentage of board members that sit on boards of other companies.

There is substantial evidence supporting the view that directorships serve as a measure of a director's reputation as a monitor. Fama (1980) and Fama and Jensen (1983) argue that the market for directors serve as an important source of incentives for them to be good monitors because being directors of well-run companies signals value to the external market, which rewards them with additional directorships.

Despite this, Shivdasani and Yermack (1999) suggest that the benefits of outside directorship may be non-linear, declining for the highest directorship levels as busy directors have less available time to monitor management properly. There is evidence for the costs associated with serving on multiple boards. These studies suggest that too many directorships may lower the effectiveness of directors as corporate monitors.

In contrast, Ferris *et al.* (2003) claim that busy boards are as effective as non-busy boards at monitoring and find no relation between the average number of directorships held by outside directors and the firm's market-to-book ratio.

In this context, it's expected that voluntary disclosure is related with the level of expertise of the board (with no predicting sign).

H_{2e}: Voluntary disclosure is related to management expertise.

3.2.1.3 Relation between corporate characteristics and voluntary disclosure

According to Wallace *et al.* (1994) firm performance represents information that may be of interest to accounting information users. Profitability ratios are usually used in empirical research on voluntary disclosure (Raffournier, 1995; Meek *et al*., 1995; Ahmed and Courtis, 1999; Ho and Wong, 2001; Camfferman and Cooke 2002; Eng and Mak, 2003; Petersen and Plenborg, 2006).

Lang and Lundholm (1993) argue that disclosure is influenced by a company's relative performance but the direction of the relationship between the performance and disclosure is rather unclear. For example, firms with negative information (particularly earnings information) might wish to convey more information to enhance creditability or to reduce the likelihood of legal liability.

Despite this, the positive relation between disclosure and firm performance is implied by theoretical models of voluntary disclosure in the face of adverse selection. According to Meek *et al*. (1995) companies that are performing well tend to voluntarily disclose more information. In general, in the presence of disclosure costs, firms whose performance exceeds a certain threshold will disclose, while those below the threshold will not. Raffournier (1995) and Wang *et al.* (2008) found empirical evidences of the positive relation between the extent of disclosure and profitability. According to Wang *et al.* (2008) as the firm's earnings increase, managers have incentives to supply more information to the market in order to signal quality and legitimate their activities.

In this context, it's expected voluntary disclosure to be positively related with company's performance.

H_{3a}: Voluntary disclosure is positively related to companies' performance.

A higher level of debt could lead to higher levels of agency costs, which could be eliminated by higher levels of disclosure. However, several studies support a negative relationship between the level of debt and disclosure practices, as is the case of Zarzeski (1996), Abd-Elsalam and Weetman (2003). The argument is sustained by the so-called signalling factors that support that companies with high leverage ratio belong to the *bank–oriented financial system*, where capital markets are no longer seen as the main source of finance and corporate information becomes more private than public. Otherwise, according to the signalling theory, firms with low leverage ratio are motivated to send signals to the market about their financial structure (Khlifi and Bouri , 2010).To Jensen (1986) increased leverage is expected to reduce disclosure because leverage helps control the free cash flow problem and the agency costs of debt are controlled through restrictive debt covenants in debt agreements rather than increased disclosure of information in annual reports. The study of Eng and Mak (2003) follow the idea that the inverse relationship between debt and disclosure is consistent with debt being a mechanism for controlling the free cash flow problem, reducing the need for disclosure.

To Jensen and Meckling (1976) companies with a high level of debt try to reduce monitoring costs by disclosing more information. Tarca *et al.* (2005), based in Nobes

(1998), argue that firms with higher levels of debt to public agents tend to follow more the IAS/IFRS in their disclosure practices. According to the authors, and following the premise of agency theory, firms tend to disclose more information in case of debt to public agents, thereby enhancing the importance of identifying the level of inside and outside debt. Wang *et al.* (2008) and Allegrini and Greco (2011) predict a positive relation between debt and voluntary disclosure.

In this context, it's expected voluntary disclosure to be related with the level of debt (with no predicting sign).

H_{3b}: Voluntary disclosure is related to the level of companies' debt.

Literature find evidence that larger firms disclose more information (*e.g.* Cooke, 1989a,b; Meek *et al*., 1995; Hossain *et al*., 1995; Camfferman and Cooke, 2002; Eng and Mak, 2003; Arcay and Vázquez, 2005; Wang *et al.*, 2008; Allegrini and Greco, 2011). Also Beattie *et al.* (2004) find a positive relation between the size and the reporting of British companies. Hope (2003) emphasizes the need of increasing the quality of accounting information available abroad due to high demand of this information.

To Jensen and Meckling (1976) large companies face greater agency costs because they require large volumes of external capital to finance their investments. Large companies also attract more attention from various stakeholders and, therefore, would be more exposed to so-called political costs and have more willingness to adopt certain strategies to

reduce those costs. Watts and Zimmerman (1990) also argue that the political costs are greater in large organizations. Consequently, large firms tend to disclose more information to reinforce confidence and to reduce such costs.

To Schipper (1981) and Lang and Lundholm (1993) larger firms have greater impact on society, making extensive use of capital markets and having a greater number of analysts following them. These facts make these companies willing to provide more information to the market.

According to Land and Lundholm (1993) the cost of disseminating disclosures may be higher for small firms because the news media are more likely to carry stories about large firms and analysts are more likely to attend their meetings. Empirical evidence on the relation between firm size and earnings forecasts (*e.g.* Cox, 1985; Waymire, 1985; Lev and Penman, 1990) indicates that more earnings forecasts are reported in the financial press for large firms than for small firms. Atiase (1985) and Freeman (1987) provide evidence that a greater proportion of earnings information is *impounded* in stock prices prior to earnings announcements for large firms than for small firms, suggesting that the amount of information provided by and about firms is increasing in firm size.

In this context, it's expected that the amount of information provided by and about firms is increasing in firm size.

H_{3c}: Voluntary disclosure is positively related with the size of the company.

For a firm without growth opportunities, mandated disclosure might be of sufficiently high quality to produce low information asymmetry. Because this firm has no need for external finance and has low litigation, incentive, and proprietary costs, it has little need for voluntary disclosure (Core, 2001). Growth firms have greater information asymmetry and agency costs (Smith and Watts, 1992; Gaver and Gaver, 1993) and, according to Eng and Mak (2003), growth firms are expected to disclose more information than non-growth firms.

Hossain *et al.* (2005) argue that high growth firms need external equity to stimulate their growth and equity providers require oriented information for the estimation of equity risks. Consistent with this argument, some studies document that disclosure is associated with a lower cost of equity (Botosan, 1997; Healy *et al*.,1999; Lang and Lundholm, 2000; and Botosan and Plumlee, 2002) and with a lower cost of debt (Sengupta, 1998), which in turn stimulates firms' growth opportunities through the availability of finance to fund their acquisition and development. Otherwise, Myers and Majluf (1984) analytically show that if managers or insiders possess more information about the firm than investors, then equity may be '*under-priced*' by the market. They suggest that the firm could mitigate this problem by releasing information to outside.

Following this point of view, it's expected that voluntary disclosure is positively related with growth opportunities.

H_{3d}: Voluntary disclosure is positively related with growth opportunities.

The various hypotheses presented before are summarized in table 3.1.

Table 3.1 – Summary of the first group of hypotheses

Ownership structure	Predicted sign
H_{1a}: Voluntary disclosure is negatively related to managerial ownership.	**-**
H_{1b}: Voluntary disclosure is positively related to government ownership.	**+**
H_{1c}: Voluntary disclosure is negatively related to the presence of a large shareholder.	**-**
Directors' and Supervisors' structures	
H_{2a}: Voluntary disclosure is positively related to the proportion of non-executives and independents directors on the board.	**+**
H_{2b}: Voluntary disclosure is related to the size of the board.	**+/-**
H_{2c}: Voluntary disclosure is positively related with the existence of monitoring and control structures.	**+**
H_{2d}: Voluntary disclosure is positively related to management incentives.	**+**
H_{2e}: Voluntary disclosure is related to management expertise.	**+/-**
General corporate characteristics	
H_{3a}: Voluntary disclosure is positively related to companies' performance.	**+**
H_{3b}: Voluntary disclosure is related to the level of companies' debt.	**+/-**
H_{3c}: Voluntary disclosure is positively related with the size of the company.	**+**
H_{3d}: Voluntary disclosure is positively related with growth opportunities.	**+**

3.2.2 The direct and indirect relation between corporate governance rules and information asymmetry

The second group of hypotheses will be tested using a structural equation model. We intend to study the direct and indirect relation between governance rules and information asymmetry, through the voluntary disclosure of information and organizational performance.

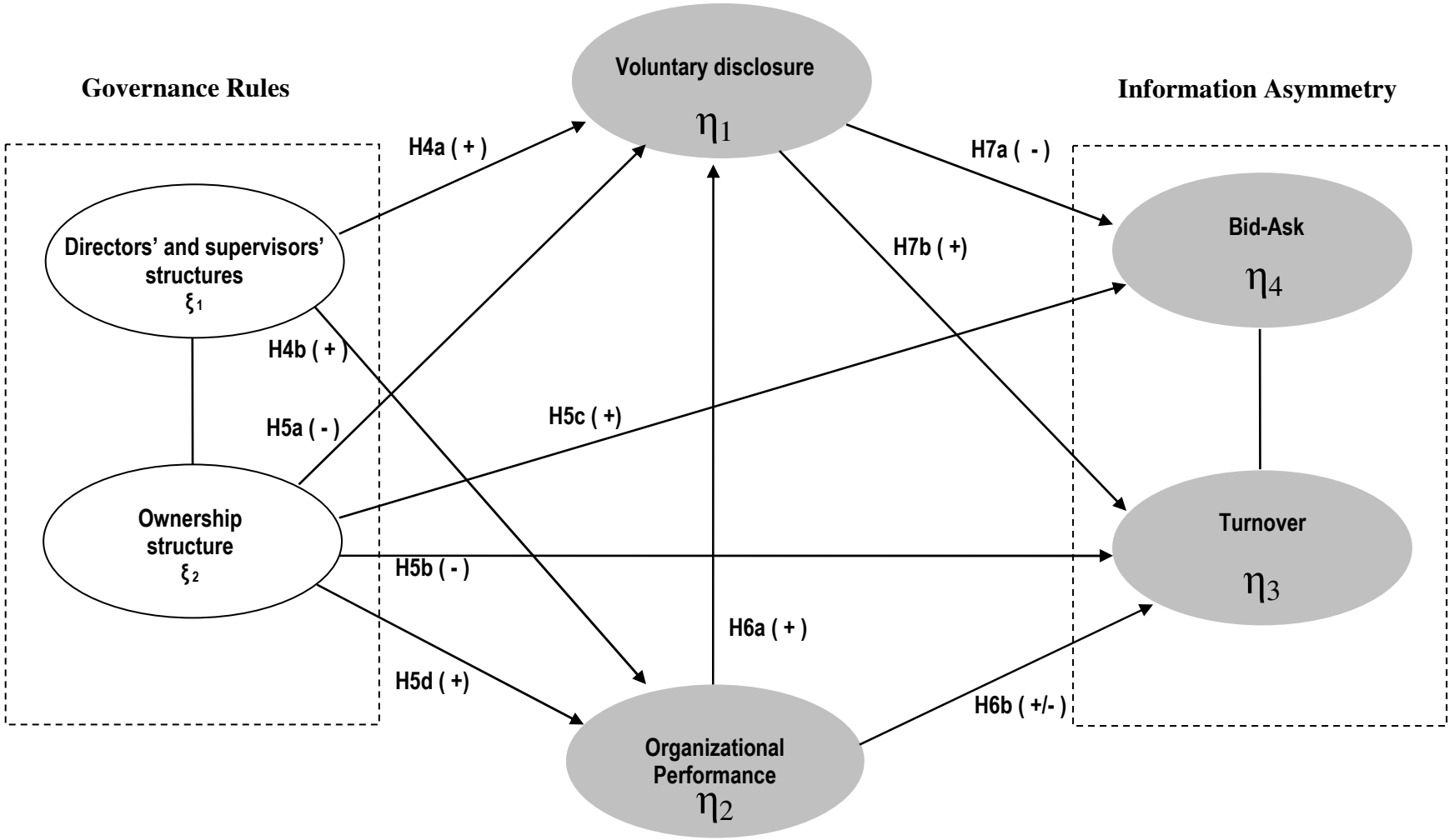
As stated previously, the accounting report is the most affirmative way to give visibility to the activity and to the organizational performance. Because of this, it works as a sign of the governance of the company but also as a measure of the management quality. Corporate disclosure has a major role to ensure the efficient functioning of capital markets. Lang and Lundholm (1993) argue that firms with high disclosure ratings tend to show high contemporaneous earnings performance. Also Petersen and Plenborg (2006) state that firms may increase disclosure when they are performing well. In this sense, and as explained previously, the inclusion of organizational performance in the proposed model is explained by the fact that disclosure is a channel through which existing and potential shareholders obtain valuable information about the firm, namely about the company's performance. A higher profitability might induce management to supply more information to illustrate its ability to maximize the shareholder's value (Singhvi and Desai, 1971). In this sense, and according to Healy and Palepu (2001: 431), "*the association between capital market variables and disclosure may be driven by firm performance rather than disclosure per se*". Our model followed the arguments of the authors by considering that

"*disclosure changes are unlikely to be random events: they are likely to coincide with changes in firm economics and governance characteristics*".

With the proposed model we want to understand how corporate governance rules affect the level of information asymmetry in the capital market, directly and indirectly. For that we divided the governance rules in two major constructs: the ownership structure and the directors' and supervisors' structures. We hypothesized that directors' and supervisors' structures can influence the organizational performance and the information disclosed by firms to its shareholder and this, in turn, would affect the level of information asymmetry between management and shareholders. In relation to ownership structure, it is expected to exert an indirect influence on the level of information asymmetry, but the previous research showed us that a direct influence can also be expected.

Like stated previously, the Spain and Portugal institutional setting has in common with other European Continental countries a relatively low number of listed companies, an illiquid capital market and, above all, a high level of concentration in corporate shareholdings. Following these arguments, will be included in the construct "ownership structure" variables that characterize the ownership concentration of the companies under study. The research model is presented in figure 3.1. The hypotheses, as well as the arguments of its formulation, are following presented.

Figure 3.1 – Path graphic of the proposed model



3.2.2.1 Directors' and supervisors' structures

According to Dehaene *et al.* (2001) the board of directors is an important entity in a company, creating a link between shareholders and managers and therefore playing an important role in the governance of a firm. To the authors, the board of directors is the most important and frequently used supervisory mechanism for management actions and, from a governance point of view, board composition thus has an impact on corporate performance. For example, Baysinger and Butler (1985) find that companies where the board is dominated by non-executive directors perform better than boards that are not. Lee *et al.* (1992) report that the shareholders' value is best served when the board contains a substantial number of independent directors. Klein (1998) demonstrates a linkage between firm performance and board composition by examining the committee structures of boards and directors' roles within these committees. She was able to find significant ties between firm performance and how boards are structured.

Cai *et al*. (2006) and Kanagaretnam *et al*. (2007) assert that firms with boards that are effective in monitoring management activities tend to be associated with more frequent disclosures of quality information which in turn reduces information asymmetry. Firms with such effective boards also provide additional voluntary disclosures apart from those required by mandatory regulation. The literature also recognize that a key role in the board monitoring activities is played by supervising structures, like the audit committee, the remuneration committee or the external auditor (Laksmana, 2008; O'Sullivan *et al.,* 2008).

In this sense, we can hypothesize that effective directors and supervisors structures are factors that function as tools that enhance organizational performance and exert a direct and determinant influence on the level of voluntary information disclosed.

In this context, we established the following relations:

H_{4a}: There is a positive relation between directors' and supervisors' structures and voluntary disclosure.

H_{4b}: There is a positive relation between directors' and supervisors' structures and the level of organizational performance.

3.2.2.2 Ownership structure

The structure of ownership determines the level of monitoring and thereby the level of disclosure. Fama and Jensen (1983) propose that where share ownership is widely held, the potential for conflicts between the principal and the agent is greater than in more closely held companies. As a result, more information is disclosed in widely held firms so that principals can effectively monitor that their economic interests are optimized and agents can signal that they act in the best interests of the owners. In the same sense, Petersen and Plenborg (2006) argue that firms with a high ownership concentration may be reluctant to provide voluntary disclosure since shareholders have alternative ways (inside) of getting information. Previous empirical evidence also indicates a negative relation between ownership concentration and disclosure (McKinnon and Dalimunthe, 1993; Mitchell *et al*.,

1995; Schadewitz and Blevins, 1998). Also Chau and Gray (2002) show that there is a positive association between wider ownership and the extent of voluntary disclosure.

High levels of concentration of capital are accompanied by the owner's considerable involvement in the firm's management, which, in turn, lead to unrestricted access to information by "insiders" and less available information to "outsiders" (Raffournier, 1995). According to Heflin and Shaw (2000) in the case of ownership concentration, large shareholders may have access to private, value-relevant information about the firm. In this situation, market makers mitigate losses to informed traders by charging wider spreads and reducing the number of shares they offer in response to increases in the probability of informed trading. Also, Bolton and Von Thadden (1998) suggest that in a concentrated ownership structure the number of shareholders who can trade the stock is smaller which reduces the liquidity of the stock. Recently, Jacoby and Zheng (2010) find that their ownership concentration variables have an adverse impact on trading volume. Jiang *et al.* (2011) results reveal that ownership concentration in general is significantly positively associated with bid-ask spreads observed around annual report releases dates.

To Berle and Means (1932) diffuse ownership yields significant power in the hands of managers whose interests do not coincide with the interest of shareholders. As a result, corporate resources are not used for maximization of shareholders' value. Shleifer and Vishny (1986), McConnell and Servaes (1990), Megginson *et al.* (1994) and Zingales (1994) find a strong positive relation between ownership concentration and corporate performance and attribute it to the impact of better monitoring.

In this context, we established the following relations:

H_{5a}: There is a negative relation between ownership concentration and voluntary disclosure.

H_{5b}: There is a negative relation between ownership concentration and the turnover ratio.

H_{5c}: There is a positive relation between ownership concentration and the bid-ask spread in the market.

H_{5d}: There is a positive relation between ownership concentration and organizational performance.

3.2.2.3 Organizational performance

Singhvi and Desai (1971) claim that in face of adverse selection, higher profitability might induce management to supply more information to illustrate its ability to maximize the shareholder's value and to increase its managerial compensation. In this sense, the authors also argue that the management of a profitable firm may feel proud of its achievement and wish to disclose more information to the public to promote a positive impression of its performance. Some research on management earnings forecasts (*e.g.* Patell, 1976; Penman, 1980; Lev and Penman, 1990) suggest that firms tend to disclose more frequently when they are experiencing favourable earnings results and that earnings forecasts are, on average, associated with positive returns.

According to Amihud and Mendelson (1986) stocks of firms with higher returns are allocated in equilibrium to portfolios with longer expected holding periods. In this sense, the authors claimed that observed asset return must be an increasing function of the expected holding periods, it also implies that the observed asset return must be a decreasing function of the turnover rate of that asset. More recently, Petersen and Plenborg (2006: 134) test, through regression models, the relation between the firm's return on invested capital and the turnover ratio, with no predicted sign. According to the authors "*the sign of the association between ROIC (return on invested capital) and information asymmetry is undeterminable*". Their results show a negative relation between the variables, but with no statistical significance.

In this context, we established the following relations:

H_{6a}: There is a positive relation between organizational performance and voluntary disclosure.

H_{6b}: There is a relation between organizational performance and the turnover ratio (no predicted sign)

3.2.2.4 Voluntary disclosure

Merton (1987) argues that investors are more likely to invest and trade in firms that are well known or that they judge favourably. If higher disclosure quality increases a firm's visibility and/or reduces the costs of processing firm specific public information, then higher disclosure quality will induce more trading in firm's stock by uninformed investors.

Diamond and Verrecchia (1991) and Kim and Verrecchia (1994) argue that voluntary disclosure reduces information asymmetries among informed and uninformed investors. Thus, it's expected that voluntary disclosure promote more efficient prices and increase stock transactions.

Several studies document a relation between the level of disclosure and the proxies of information asymmetry. Lang and Lundholm (1996) provide evidence that potential benefits of increased disclosure include reduced estimation risk and reduced information asymmetry. Welker (1995) documents a significant negative relation between analyst's ratings of firm's disclosures and bid-ask spreads. Healy *et al.* (1999) find that firms with increased analysts' ratings of disclosure had significantly higher bid-ask spreads than their industries prior to the disclosure change. After the disclosure increase, bid-ask spreads for the sample firms reverted to the same levels as their industry peers. Leuz and Verrecchia (2000) study German firms that switched from German to an international accounting regime, IAS or United States GAAP, thereby committing themselves to increased levels of disclosure. They find that firms that switch to an international accounting regime, in general, experience lower bid-ask spreads and higher trading volume.

Petersen and Plenborg (2006) find a negative and statistical significant association between the level of voluntary disclosure and the bid-ask spread and positive and statistical significant association between the level of voluntary disclosure and the turnover ratio. This result is generally supported through year-by-year regressions. This coherence indicates that if firms focus on improving the level of disclosure, they attract investors'

attention. As a result they may experience more efficient prices on shares. Also Espinosa *et al.* (2008) find a negative relation between their disclosure index and the bid-ask spread.

In this context, we established the following relations:

> **H_{7a}:** There is a negative relation between voluntary disclosure of information and the bid-ask spread.
>
> **H_{7b}:** There is a positive relation between voluntary disclosure of information and the turnover ratio.

The various hypotheses presented before are summarized in table 3.2.

Table 3.2 – Summary of the second group of hypotheses

Directors' and supervisors' structures	Predicted sign
H_{4a}: There is a positive relation between directors' and supervisors' structures and voluntary disclosure.	**+**
H_{4b}: There is a positive relation between directors' and supervisors' structures and the level of organizational performance.	**+**
Ownership structure	
H_{5a}: There is a negative relation between ownership concentration and voluntary disclosure.	**-**
H_{5b}: There is a negative relation between ownership concentration and the turnover ratio.	**-**
H_{5c}: There is a positive relation between ownership concentration and the bid-ask spread in the market.	**+**
H_{5d}: There is a positive relation between ownership concentration and organizational performance.	**+**
Organizational performance	
H_{6a}: There is a positive relation between organizational performance and voluntary disclosure.	**+**
H_{6b}: There is a relation between organizational performance and the turnover ratio (no predicted sign)	**+/-**
Voluntary disclosure	
H_{7a}: There is a negative relation between voluntary disclosure of information and the bid-ask spread.	**-**
H_{7b}: There is a positive relation between voluntary disclosure of information and the turnover ratio.	**+**

3.3 Conclusion

In this chapter we presented the two sets of research hypotheses to be tested, and the arguments that led to its formulation.

The first group of hypotheses is aimed at studying the corporate governance determinants of voluntary disclosure. These hypotheses are tested through multiple regression models. The second group of hypotheses is intended to study the direct and indirect relations between governance rules and information asymmetry, through the voluntary disclosure of information and the organizational performance. In this case we presented the theoretical model of relations (path graphic) which will be tested using the structural equations methodology.

The following chapter presents the sample, the analysis method, the definition of the variables and the descriptive statistics.

Chapter 4 –Research method

4.1 Introduction

In this chapter we begin by examining the composition of the sample that will serve as the basis for our study. Following this we describe the methodology used in our data analysis and present some of the most relevant aspects of the Structural Equation Model (SEM) methodology. After that we discuss the definition of the variables: the construction of the voluntary disclosure index, the variables related with corporate governance, the general corporate characteristics and the proxies of information asymmetry.

Finally, we make the presentation and interpretation of the descriptive statistics for all variables. We proceed to an interpretation of the results of applying the voluntary disclosure index and assess the validity of this measure. In the last point we analyse separately the descriptive statistics for the Portuguese and for the Spanish companies.

4.2 Sample

Our sample consists of 140 listed companies from the Iberian Peninsula. Portugal has 38 companies included in this study, which represents 27,14% of the total sample and Spain has 102 companies included, which represents 72,86%. The sample consists of non-financial Iberian companies listed in the market in the year of 2007. Disregarding financial

firms, insurance companies and those that have different accounting years than that of the calendar year (*e.g.* football clubs), it's justified because they differ, by their special nature, in the specificity of their activities.

Our sample shall work as a whole, not being our purpose to make of the comparative analysis our subject of study, but rather to examine the group of companies of Iberian Peninsula. We made an initial selection of Portuguese and Spanish companies listed in the stock market, extracting from the universe of listed companies in both countries those that checked the situation described above. However, the lack of data, especially with regard to variables related to information asymmetry, coming from *Thomson Datastream database*, led to a reduction of the initial sample to 140 companies. The list of companies in the sample is found in appendix 1.

The consolidated accounts of the selected companies are analysed, when these companies are required to consolidate, and not the individual accounts, since for the study it makes more sense to analyse all the data of the group, due to the fact that all businesses contribute to the performance of the mother company. The data used in the research was collected from the *Thomson Datastream* database as well as from the analysis of reports and accounts of the companies and the information disclosed by companies in their official websites, being for this reason a large part of the information hand collected. We also collected data from the annual reports about the corporate governance of listed companies, made by the Portuguese Securities Market Commission (CMVM, 2008) and the Spanish Securities Market Commission (CNMV, 2008) for the year of 2007.

Given the lengthy analysis of the variables related to voluntary disclosure of information, which involved the reading and classification of information contained in voluntary reporting of annual accounts and the official websites of companies, was not considered practicable to extend this analysis to a broader horizon. In this manner, and following a series of studies in this area that analysed one year of disclosure[24], we choose to analyse the year of 2007. In this sense, we analysed the information disclosed by Iberian Peninsula non-financial listed companies few time after the obligation of following the International Financial Reporting Standards (IFRS) and after a set of amendments on the corporate governance recommendations adopted in both countries. In Spain, the Unified Good Governance Code, applicable from 2007 onwards, provided a common standard for the good governance practices of all listed firms. In Portugal, the recommendations on Corporate Governance were implemented on a comply-or-explain basis in 2001, continuing to be regularly improved through a process of bi-annual amendments.

4.3 Data analysis

We are going to employ univariate and multivariate techniques for data analysis in our study. We start with the analysis of the correlations between corporate governance characteristics, voluntary disclosure and information asymmetry proxies. After that we employ multiple regression equations to examine the relationship between voluntary disclosure, the governance rules and corporate characteristics. The analysis of the regressions results will help us to confirm the previous developed hypotheses about the

[24] See, for example, the work of Botosan (1997), Eng and Mak (2003), Chau and Gray (2002), Wang *et al.* (2008) or Allegrini and Greco (2011).

determinants of voluntary disclosure. To extend the analysis we use the methodology of structural equation models.

Multiple regression equations are widely used in research on corporate governance, but it can only process one dependent variable at a time. Structural Equation Model (SEM) can check the dependant relationship of two or more variables at the same time. According to Hair *et al.* (1998) SEM is more appropriate in an examination of multi-dimensional issues. Thus, we applied the technique of structural equation modelling, path analysis, to test simultaneously for existing relationships among the variables included in our study. Structural equations are particularly suitable because they allow us to do simultaneous analysis of a series of multiple regression equations and are particularly useful when the dependent variable in one equation becomes an independent variable in the subsequent ones. Also the path analysis allows us to do the confirmatory factor analysis, facilitating the introduction of non-observed concepts (latent constructs). For not being a methodology so frequently used in this research area, we will approach in the following points some of the main aspects related with its implementation.

4.3.1 Main aspects of SEM

According to Hair *et al.* (1998) SEM techniques are distinguished from others by two characteristics: (1) estimation of multiple and interrelated dependence relationships, and (2) the ability to represent unobserved concepts in these relationships and account for measurement error in the estimation process.

The SEM is the result of the evolution that the multiequation modelling has suffered in recent years to adapt itself to solve problems that arise in the social sciences, particularly associated with the difficulty of measuring variables. The SEM enfolds an entire family of models with many designations, among them covariance structure analysis, latent variable analysis and confirmatory factor analysis. Following Hair *et al.* (1998) SEM, in their simplest sense, provide an estimation technique to proceed to a better and more efficient estimation of simultaneous equations through multiple regressions. However, these models extend the field of analysis of simultaneous equations, while acknowledging that the variables we want to analyse can not be observed directly. SEM involves two types of variables: observed and latent variables. The SEM assumes that the latent variables can not be observed directly but only through indicators that are partial and imperfect measures of these variables.

Thus, in building a structural equation model we shall have indicators and constructs. Indicators are observed variables, sometimes called "*manifest variables"* or "*reference variables"*. Four or more are recommended, but three is acceptable and common practice. However, two indicators or even a single indicator may be acceptable if the researcher is confident in the measure's validity and reliability. In fact, the prime consideration in selecting indicators is whether they are theoretically and reliably measured (Hair *et al.*, 1998). Latent variables are the "*unobserved variables"* or "*constructs"* which are measured by their respective indicators[25].

[25] During our work we will use the term "indicators" for observed variables and the terms "latent variable" or "construct" for unobserved variables.

Duarte (2000) emphasizes the ability of these models to incorporate, in the analysis, concepts that can not be directly observed (latent variables), taking into account its previous measurement by indicators selected for this purpose. This is further boosted by the possibility offered by this type of modelling, to study the direct and indirect relations between variables in the model. In this sense, and following Hoyle (2005), we can say that these kinds of models, by allowing the calculation of direct, indirect and total effects when studying causal relationships between variables, provide a more comprehensive approach in terms of defining our process of data analysis.

4.3.1.1 The measurement model and the structural model

Both the measurement model and the structural model are part of the structural equation model. The measurement components of the structural equation models show the relationship between the latent variables and indicators selected for the purpose of their measurement. According to Hair *et al*. (1998: 581) "*the measurement model is a sub model in SEM that (1) specifies the indicators for each construct, and (2) assesses the reliability*[26] *of each construct for estimating the casual relationships*".

Each latent variable is usually associated with one or more indicators of measurement. However, multiple indicators are preferable to a single one. Although it be noted that there is no consensus in the literature about the ideal number of indicators for each latent variable.

[26] Also according to Hair *et al.* (1998: 583) reliability is the "*degree to which a set of a latent construct indicators are consistent in their measurements".*

This allocation of indicators to measure latent variables should be based on the hypothesis raised by the theory, through the matrix of restrictions (Λx and Λy) included in the model, that specifies which indicator or indicators measure a particular latent variable. The elements of the matrices Λx and Λy specify the relationship between the observed and latent variables, those being designated as factor loadings. According to Schumacker and Lomax (1996) each factor loading provides information about how a particular indicator is measuring a given latent variable.

By recognizing explicitly that the indicators are partial and imperfect measures of that variable and through the inclusion of the error term (ε and δ), we combine the concerns of measurement with the development of the model. Measurement errors represent the proportion of variance of the observable variable which is not explained by the latent variables that are supposed to be measured by that variable (Schumacker and Lomax, 1996).

According to Hair *et al*. (1998) the measurement model is similar in form to factor analysis. The major difference lies in the degree of control provided by the researcher. In factor analysis, the researcher can specify only the number of factors, but all variables have loadings (*i.e.* they act as indicators) for each factor. In the measurement model the researcher specifies which variables are indicators of each construct, with variables having no loadings other than those on its specified construct.

In summary, the formulation of the measurement model specifies the selected indicators for each latent variable and its estimation and evaluation allows the analysis of the

following aspects: the analysis of the reliability allows us to check if the chosen indicators selected measure accurately the latent variables; the analysis of the statistical significance of the estimated coefficient that relates the latent variable to the indicator in question allows us to check what is the best indicator to measure the latent variable in question; and the analysis of the "dimension" of the error term of each measurement equation allows us to verify in what extent the observed variables are measuring something different from the latent variables.

In relation to the structural model Hair *et al*. (1998: 583) state that it's a "*set of one or more dependence relationships linking the hypothesized model's constructs*". In this way, the structural model becomes one of the most useful in representing the interrelationships of variables between dependence relationships.

The estimation of this model allows us to determine the interrelationship between the endogenous variables and the impact of each of the exogenous variables in those variables. Simultaneously it is recognized, by the inclusion of the error term (ζ), the possibility that there were other exogenous variables beyond those considered as possible determinants of the variables to explain.

4.3.1.2 Mathematical formulation of the path diagram

A path diagram is a schematic representation of the relations between the set of variables under study, which may include not only the causal relationships between the constructs (*i.e.* relations between the independent and dependent variables) but also the relations of

association (correlations), which can be considered either among the constructs or among their indicators.

According to Hair *et al.* (1998) the term *construct* is used to represent a theoretical concept that cannot be measured directly, for this reason it's necessary to measure it indirectly through indicators. In a path diagram it's usually represented by an oval. Besides the constructs, arrows are also necessary in order to construct a path diagram. These arrows indicate the type of relations established between the constructs (a right arrow indicates a direct link of causality; a curved arrow, or a line without arrows at its end, simply indicates the existence of a correlation between the constructs).

After developing the theoretical model, and having proceeded to its schematic representation in the form of a path diagram (see figure 3.1, chapter 3), we can think of it in its more formal specification using to that end a series of equations that define it: (A) the measurement model specifying which variables measure which constructs, (B) the structural equations linking constructs, and (C) a set of matrices indicating any hypothesized correlations among constructs or variables (Hair *et al.,* 1998).

The conversion of a path diagram led to the specification of a set of equations for both the structural model and the measurement model. Below we present, even though in a reduced form, the model that is going to be used as basis in our analysis. As stated previously, the structural equation models consist of two parts: the measurement model and the structural model. Following the notation of Hair *et al.* (1998) the model to be used can be presented in its matrix form, by the following system of equations:

Measurement Models:

$$\underset{(p \times 1)}{Y} = \underset{(p \times m)}{\Lambda_y} \underset{(m \times 1)}{\eta} + \underset{(p \times 1)}{\varepsilon}$$

$$\underset{(q \times 1)}{X} = \underset{(q \times n)}{\Lambda_x} \underset{(n \times 1)}{\xi} + \underset{(q \times 1)}{\delta}$$

Structural Model:

$$\underset{(m \times 1)}{\eta} = \underset{(m \times m)}{B} \underset{(m \times 1)}{\eta} + \underset{(m \times n)}{\Gamma} \underset{(n \times 1)}{\xi} + \underset{(m \times 1)}{\zeta}$$

Where:

Y – vector of the endogenous indicators;
X – vector of the exogenous indicators;
η – vector of the endogenous constructs;
ξ – vector of the exogenous constructs;

$\Lambda_{x \text{ and }} \Lambda_y$ – matrices of the regression coefficients of X on ξ and of Y on η, respectively;
B – matrix of the relationships of endogenous to endogenous constructs;
Γ – matrix of the relationships of exogenous to endogenous constructs;
Φ - matrix of correlation among exogenous constructs;
Ψ - matrix of correlation among endogenous constructs
ζ – vector of residuals of the structural model;
ε and δ – residuals of the Y and X vectors, respectively.

Minimum allowed hypotheses in the estimation of the complete model:

(1) ε is not correlated with η;
(2) δ is not correlated with ξ;
(3) ζ is not correlated with ξ;
(4) ζ, δ and ε are not correlated with each other, but, there may however, exist correlation between the error terms of equations of each of the measurement and structural models, which is calculated when estimating these models;
(5) $E(\zeta) = E(\delta) = E(\varepsilon) = 0$

Matrices sizes:

n - number of exogenous constructs;
m – number of endogenous constructs;
q – number of exogenous constructs indicators;
p – number of endogenous constructs indicators.

4.3.1.3 Aspects that affect the estimation of SEM

In the literature different aspects have been identified that affect the estimation of structural equation models and the performance of each precision measure index of the adjustment. Among these issues we can highlight: model misspecification, sample size, departures from normality and estimation procedure and complexity model (Byrne, 1998).

-Model Misspecification

According to Hair *et al*. (1998: 604) "*model misspecification refers to the extent that the model suffers from specification error. (…) specification error is the omission of relevant variables from the specified model"*.

According to the authors, it's commonly accepted that all models suffer from specification errors. The structural equation models are no exception, as they don't include all potential variables. However, specification errors can be more or less depending on if the researcher has included all constructs and indicators that are relevant to the theory. A well-fitting model will have small residuals. Large residuals suggest model misspecification. Also sample size can affect the ability of the model to be correctly estimated. Thus, the greater

the possibility of not having a completely specified model, the greater the number of elements in the sample should be.

-Sample size

The sample size is one of the aspects which affect the estimation results of SEM and its evaluation. There is a unanimous view among researchers that the greater the number of parameters of the model to estimate, the greater the size of the sample should be. However, there remains the discussion of what should be considered a reasonable sample size. Kline (1998) considers that a sample with fewer than 100 cases doesn't provide a stable analysis, unless the model to be estimated is too simple. In this sense, the author classifies samples with fewer than 100 cases as small, those between 100 and 200 cases as medium and those that exceed the 200 cases as large, by advocating the use of the latter. Resinger and Turner (1999) advocate the use of a sample of between 100 and 400 cases.

However, it's important to note that the values mentioned can not be regarded as absolute, since other aspects must be taken into account. According to Hair *et al.* (1998) as model complexity increases, so do the sample size requirements. It should also be noted that, on one hand, the increase in sample size leads to a more stable solution, on the other hand, this may lead to a factor of instability, namely when using the method of maximum likelihood estimation (being the most common estimation procedure), for it is very sensitive when in the presence of a very small samples (less than 50 cases) or very large (over 500 cases).

-Estimation procedure and departures from normality

Early attempts at structural equation model estimation were performed with ordinary least squares (OLS) regression. But these efforts were quickly supplanted by maximum likelihood (ML) estimation. This method is efficient and unbiased when the assumption of multivariate normality is met (Hair *et al.,* 1998). The sensitivity of ML estimation to no normality, however, created a need for alternative estimations techniques like the generalized least squares (GLS), asymptotically distribution free (ADF), among others.

Chou and Bentler (1995) consider that it is difficult to find recommendations in the existing literature regarding the estimation method to use when working with SEM. The method of maximum likelihood is that which has been widely used, being used by defect in many of the software programs (*i.e.* LISREL, AMOS, EQS, among others). However, this estimation method assumes, as stated above, that the observed variables follow a normal distribution, an assumption that is often violated in many applications of SEM. Despite this fact, there are arguments in the literature that hang on to this method even when the variables deviate from the hypothesis of normal distribution. Hoyle (1995) argues that the ML method is reasonably robust against modest violations of the assumption of normality of the observed variables. Along these lines, Jaccard and Wan (1996: 74-75) argue that "*there is a growing body of literature suggesting that maximum likelihood estimation is reasonably robust to many types of violation of multivariate normality. The issue, then, is not whether non normality exists, but rather whether the degree of non normality is sufficient to disrupt effective data analysis*".

A summary of the main methods of estimation used in SEM, as well as a short approach of the advantages and disadvantages of using one in detriment of the other, is present in appendix 2.

Chou and Bentler (1995), when conducting a review of previous studies, argue that the estimates for the parameters, obtained by the ML method, are good even when the variables do not follow a joint normal distribution, but are continuous. Olsson *et al.* (2000) comparing the performance of estimation methods such as ML, GLS and WLS (weighted least square), using a simulation study, conclude that of the three methods the ML is more insensitive than the others to variations in sample size and kurtosis.

-Overall model fit

To assess the overall model fit the researchers can use several goodness-of-fit measures. This goodness-of-fit measure the correspondence of the actual observed input matrix with that predicted from the proposed model. These measures can be of three types: (1) absolute fit measures, (2) incremental fit measures, or (3) parsimonious fit measures. Absolute fit measures assess only the overall model fit (both structural and measurement models collectively). The incremental fit measures the proposed model with a base model, commonly referred to as null model. Finally, parsimonious fit measures the "adjust" measures of fit to provide a comparison between models with differing numbers of estimated coefficients (Hair *et al*., 1998: 611). Given the multiplicity of measures that have been proposed in literature, the question is what kind of measures should be used in the assessment of adjusting the full model to the data. In the case of SEM, unlike the case with

other multivariate analysis, there are no unique statistical tests accepted, by consensus, as being those that better assess the adjustment of the complete model to the data.

Jaccard and Wan (1996) argue that the researcher should use measures of the three classes mentioned above, to evaluate their model. If the model shows a good performance in terms of adjustment to the data when we are using measures of the three classes, it adds significantly to the confidence of the proposed model. A brief description of some goodness-of-fit tests that have been suggested in the literature, and the level of acceptance recommended for each one of them, is presented in appendix 3.

Regarding the evaluation of the model, some proposed measures are also greatly affected by sample size, as is the case of the *chi-square* statistic[27]. This measure of model fitting to data is only recommended when working with samples comprising between 100 and 200 cases (Hair *et al.,* 1998). According to Fan *et al.* (1999) measures overestimate all goodness of fit for small samples (< 200) though the Root Mean Square Error Approximation (RMSEA) and the Comparative Fit Index (CFI) are less sensitive to sample size than others, and are therefore best suited as a measure of overall adjustment and increment. According to those authors, the Goodness-of-Fit Index (GFI) and the Adjusted Goodness-of-Fit Index (AGFI) indices have, in this regard, a worse performance.

[27] Among other reasons that have been mentioned in the literature, so that the χ^2 statistic is interpreted with caution, it's particularly important its sensitivity to the size of the sample. Wheaton (1987) argues that the χ^2 depends directly on the sample size, meaning that large samples may lead to the rejection of the model.

-Complexity of the Model

The aim of the researcher should always be to find a compromise between the concern about specification errors, which the model may contain, and the benefits of building a concise and parsimonious model (Augusto, 2003). It's commonly accepted that the greater the number of variables presented in the model or relationship established, the greater the practical problems in terms of model estimation and interpretation of results. The complexity of the formulated model strongly affects the required sample size. Having more parameters to estimate, the sample size should be increased in order to obtain a stable solution (Duarte, 2000). Moreover, a greater complexity of the formulated model obstructs their assessment. Some measures for evaluating the models are sensitive to the same levels of complexity. The AGFI index is simply the index adjusted GFI facing an increasing complexity of the model. The index CFI has been considered the least affected by the complexity of the model (Hulland *et al.,* 1996).

4.4 Variables definition

4.4.1 The construction of a voluntary disclosure index for our study

The construction of the voluntary disclosure index used in this study was based on the information firms provided in their annual reports to shareholders and information disclosed in their official website.

According to Botosan (1997: 326) "*existing evidence indicates that firms coordinate their disclosure policies across different media*". Lang and Lundholm (1993), using the set of

corporate disclosure rankings produced by the Association of Investment Management and Research (AIRM), document a significant rank-order correlation between annual report and other publication disclosure rankings (coefficient of 0,62) and between annual report and investors relations disclosure rankings (coefficient of 0,41).

This suggested, according to Botosan (1997: 326), "*that a measure of disclosure level produced by examining any one aspect of corporate reporting could proxy for the general level of disclosure provided by a firm*". We relied on this assumption when we used the voluntary information found in the firm's annual report and official website to serve as a proxy for the voluntary disclosure provided by a firm across all venues.

To Botosan (1997) the annual report is generally considered to be one of the most important sources of corporate information. For example, Knutson (1992: 7) states that "*at the top of every analyst's list (of financial reports used by analysts) is the annual report to shareholders. It is the major reporting document and every other financial report is in some respect subsidiary or supplementary to it*". Also Standard & Poor's (2002) analysis focused on annual reports. According to Standard & Poor's (2002: 6) "*a focus on annual reports facilitates analysis and comparison of companies around the globe (…) academic researchers have identified annual reports as the principal communication device available to companies*".

Despite this, we also considered in the construction of our voluntary disclosure index the information that companies provided in their official sites. As explained previously, the

internet is now considered an important medium for communicating corporate financial and business information (CICA, 2008).

We constructed the voluntary disclosure index for 140 non-financial Iberian Peninsula companies listed in the market in the year of 2007. Following the argument of Botosan (1997: 327) "*disclosure policies appear to remain relatively constant over time*". For example, Haely *et al.* (1995) are able to identify only 90 large and sustained increases in AIRM disclosure rankings in a sample of 595 firms in 23 industries over the period of 1980 to 1990. Following Botosan (1997: 327) this suggests that "*year-to-year disclosure observations for a given firm are not independent*".

Our study is similar to other disclosure studies using self-constructed voluntary disclosure indices and one year of disclosure, like for example: Botosan (1997) considered a sample of 122 companies for the year of 1990; Eng and Mak (2003) used a sample of 158 companies for de year of 1995; Chau and Gray (2002) used a sample of 60 companies for de year of 1997; Oliveira *et al.*(2006) considered a sample of 56 companies for the year of 2003; Wang *et al.* (2008) analysed a sample of 110 companies for de year of 2005 and, more recently, Allegrini and Greco (2011) considered a sample of 177 companies for the year of 2007.

Our self-constructed index is also similar to that in Eng and Teo (1999), Eng *et al.* (2001) and Petersen and Plenborg (2006). The design of our index was also inspired by AICPA (1994) study of business reporting (*i.e.* the Jenkins Committee Report), the PwC Value Reporting (1999), the Business Reporting Research Project by the Steering Committee

Report (FASB, 2001b) and the report of CICA (2008). Common to these reports is the fact that they focus on investors' needs.

The technique used was the content analysis. This technique is increasingly used in studies about the content of business reporting. Beattie *et al.* (2004) describes in her study various forms of corporate reports analysis, using content analysis. Bardin (2004) sustains that the content analysis is a set of techniques for communication analysis in order to obtain, through a systematic and objective description of the contents of messages, indicators (quantitative or not) that allow the inference of knowledge concerning the conditions of production/reception (inferred variables) of the messages. Although this type of methodology presents a certain nature of subjectivity, the results of several previous studies give us assurance to use the content analysis methodology.

For Jones and Shoemaker (1994) content analysis is the method of research that formulates inferences from information, through the systematic identification of the characteristics contained in the information analysed. It is a discrete analysis because the documents can be evaluated without the knowledge of the communicator, in this aspect it differs significantly from other forms of scientific evaluation, such as questionnaires, laboratory experiments, or even field studies.

These authors consider the possibility of identifying two main approaches to complement the textual analysis, with distinct objectives, using the content analysis: the thematic approach, that aims to extract and analyse themes within the message, and the syntactic approach, whose aim is to analyse and quantify the cognitive impairment to read the

message. While the first identifies specific trends, attitudes or categories of content from the text and infers from them, the second focuses on the analysis of the readability of the text using textual syntactic features (such as length or number of syllables).

Smith and Taffer (1999) also note the existence of two broad approach alternatives to content analysis: "*oriented by form*" analysis (objective), which involves routine counting of words or concrete references, and the "*oriented by meaning*" analysis (subjective), which focuses on the analysis of the underlying themes in the research texts.

It seems to us that our content analysis falls within the *orientated by meaning analysis* of Smith and Taffer (1999) and the thematic approach of content analysis, as defined by Jones and Shoemaker (1994).

Wang *et al.* (2008) identify two steps in the process of constructing the index of disclosure: (1) create a preliminary list of items based on previous studies, (2) determine the appropriateness of each item in the sample to be studied and, if necessary, change the preliminary list of items. The author followed Cooke (1989b) regarding the score to be allocated according to the verification of each item of disclosure: if the company released an information item included in the index it would score 1 for that item, if not disclosed it would obtain a score of 0.

Typically the extent of voluntary disclosure depends largely on the items of information included in the disclosure checklist. The selection of information items is thus a very critical factor in the measurement of corporate disclosure. A disclosure checklist

incorporates significant items of information that managers are expected to provide in order to satisfy the information needs of different user groups (Ho and Wong, 2001; Chau and Gray, 2002).

To FASB (2001b) companies that make voluntary disclosures have chosen to differentiate themselves by enhancing the amount of business information they provide. In the PwC Value Reporting (1999) the most important value driver is the information regarding firm's strategic circumstances such as the future strategic direction and actions during the fiscal year, aimed at promoting strategic and financial objectives. They also found that information about market growth, market size, market share and competitiveness are among the ten most important *value drivers*. Botosan (1997), Jenkins Report (AICPA, 1994) and CICA (2008) find that information about production is important for investors. According to FASB (2001b) company should disclose forward-looking information including management's plans and including critical success factors.

Information about marketing strategy is only addressed to a limited extend in the reports. PwCs (1999) consider information about brands and customers as key drivers of value. Botosan (1997) includes some areas within marketing strategy. In the marketing strategy literature, like for example Doyle (2000) and Porter (1996), this area is considered important for the future success of a firm. To AICPA (1994) reports should include information related to the amount and quality of key resources, including human resources. FASB (2001b) identified as important disclosure the information about intangible assets that have not been recognized in the financial statements.

Following the previous arguments, we believe that informative disclosures should help investors to better understand: the company's strategy, including how it addresses opportunities and risks; the competitive environment within which the company operates; the information about management and production; forward-looking information and the framework within which decisions are made; and information about intangible assets. In this sense, our disclosure index includes six categories of voluntary disclosure: strategy, market and competition, management and production, future perspective, marketing and human capital.

The definition of the items included in each category followed some of the disclosure studies described previously (see chapter 2, table 2.6) that also used self-constructed indices of voluntary disclosure through the content analysis methodology.

In addition, we also analysed in a particular way the following research studies: "*Improving business reporting – a costumer focus (the Jenkins report)*", developed by AICPA (1994); the research study "*Improving business reporting: insights into enhancing voluntary disclosures"* (Steering Committee Report), developed by FASB (2001b); and the research study "*Corporate reporting to stakeholders*", developed by CICA (2008).

The Jenkins Committee undertook a comprehensive study to determine the information needs of users to identify the types of information most useful. The Committee designed the study to ensure that the findings were representative of a broad group of users and to distinguish between the types of information users really need and the types that are interesting but not essential.

The objective of the Steering Committee Report was to help companies improve their business reporting. By providing evidence that many companies are making extensive voluntary disclosures and by listing examples of those disclosures, the Steering Committee expected that more companies will undertake or expand their efforts of providing voluntary disclosures. The examples in this report provided helpful illustrations of such voluntary disclosures.

For the Steering Committee, the term "voluntary disclosure" describes disclosures, primarily outside the financial statements, that are not explicitly required by regulation rules. However, it is recognized that many of these "voluntary disclosures" are made to comply with the regulation requirements concerning description of a business and management's discussion and analysis of financial condition and results of operations. The Committee did not believe that a debate about the degree to which some disclosures are already required would be useful to this process and, instead, focused on the primary objective of identifying disclosures believed to be especially helpful for investors.

In the same line, the purpose of the study developed by CICA (2008) was to promote *effective communication* by providing helpful guidance for comprehensive and integrated corporate reporting. A secondary purpose was to suggest which *useful* information can be communicated. Although this research focused primarily on information disclosures in corporate annual reports and on company websites, the analyses carried out also largely apply to corporate reporting overall.

In this sense, the items selected for inclusion in our voluntary disclosure index followed the previous described research studies, but they also had to converge with the type of items reported by Iberian Peninsula listed companies. Furthemore, we focus on the objective of identifying disclosures believed to be helpful for information users.

In table 4.1 we describe a total of 60 items considered within the six categories.

Table 4.1 – Items of Voluntary Disclosure

Category	Voluntary disclosure items
Strategy 15 items	General presentation of the company's strategy Main corporate goals or objectives Main actions taken to achieve the corporate goals Definition of the deadline for each corporate goal Corporate position related to ethic/social questions Corporate position related to environment issues Detailed segment/unit performance Evaluation of the commercial risk Evaluation of the financial risk Evaluation of other risks Corporate I&D/Innovation policy Organizational Culture Main events of the current year Information about analysts Other important strategic information
Market and Competition *11 items*	Identification of the principal markets Specific characteristics of these markets Dimension of the markets Identification of the main competitors Market shares Forecast of market growth Forecast of share market growth Impact of competition on profits Identification of markets' barriers to entry Impact of markets barriers to entry on future profits Impact of competition on future profits
Management and Production 11 items	Identification of the principal products/ services Specific characteristics of these products/services Proposal for new products/services Changes in production/services methods Investment in production/services Norms of the quality of the product/service Rejection/defect rates (when applicable) I*nput/output* rates *(*when applicable) Volume of materials consumed (when applicable) Change in product materials (when applicable) Life cycle of the product (when applicable)
Future perspective 8 items	New action/initiative/event Forecasts of sales/results/cash flows Investment forecasts Return rates for each investment project Hypotheses considered in forecasts Result application proposal Dividend policy Macroeconomic background
Marketing 7 items	Disclosure of marketing strategy Disclosure of sales strategy Disclosure of distribution channels Disclosure of sales and marketing costs Disclosure of brand equity/visibility ratings Disclosure of the customer satisfaction level Disclosure of *customer mix*
Human capital 8 items	Description of workforce Description of the remuneration/compensation system Qualification policy of workers Value created by worker Employee retention rates Productivity indicators Strategies to measure human capital Other measures of human capital

We read the annual reports of 2007 for the sample firms and assessed each annual report on the six disclosure categories. Following Gray *et al.* (1995), our disclosure index is unweighted as it assumes that each indicator of each disclosure category is equally important. Cooke (1989b) suggests that unweighted indices are an appropriate research instrument in disclosure studies when the focus of the research is directed at all users of corporate annual reports rather than the information needs of any specific user group. Some authors criticise the assignment of different scores, using as argument the fact that there is considerable subjectivity in assigning weights to different disclosure items (Chow e Wong-Boren, 1987; Babio and Muiño, 2001).

Despite the use of an unweighted index, we use a scale, of zero to two, to score the level of detail of the information disclosed about each indicator inside the six categories, following the approach of Robb *et al.* (2001). The firms' score was 0 if the company did not disclose anything about that indicator, the score was 1 if the company disclosed without detail and, finally, the score was 2 if the company disclosed with detail. We considered that information was disclosed with detail if it can help it's users in their decision-making. This seems important because we can score a company if the company discloses something about that indicator, but if that information doesn't have the necessary detail it will not be useful to users. So, it is important to disclose, but it is also important to disclose with usefulness detail, so that information can provide investors with a better understanding. According to Botosan (1997) precise information is more useful and will enhance management's reputation and credibility. In short, our methodology is not to count sentences or paragraphs that refer to a particular item in a given category, but instead to see

whether there is information disclosed about the item and the degree of detail of that information.

One potential problem pointed to this methodology is that a firm may be penalised for not disclosing an item of information although there is no information to disclose on it. In order to overcome this problem, some voluntary information items were coded as "not applicable". For firms having "*not applicable*" items, the use of a relative index is suggested (Owusu-Ansah, 1998). The relative index approach is the ratio of what a firm actually disclosed to what the firm is expected to disclose. This approach has been used in several prior studies (Cooke, 1989b; Wallace *et al*., 1994; Wallace and Naser, 1995; Owusu-Ansah, 1998; Ho and Wong, 2001; Chau and Gray, 2002). The voluntary disclosure indices by category are the proportion of the firm's individual disclosure score on a category's issues to the maximum possible score applied in those issues. Thus, the voluntary disclosure index for the company i, in the category j, will be equal to the sum of the total number of points awarded by the firm i, for the category j, divided by the maximum score that the company i can achieve in the category j. So, the voluntary disclosure indices by category are calculated according to the following formula:

$$Category\_VoluntaryDisclosureIndex_{i,j} = \frac{\sum score_{i,j}}{\max(score)_{i,j}}$$

The total voluntary disclosure index is the sum of the total number of points awarded by the firm i, for all categories, divided by the maximum score that the company i can achieve

in all categories. Thus, the total voluntary disclosure index is calculated according to the following formula[28:]

$$Total\_VoluntaryDisclosureIndex_i = \frac{\sum score_i}{\max(score)_i}$$

A scoresheet was designed for scoring firms on the amount and the level of detail of disclosures. Appendix 4 contains a scoresheet that illustrate, for one of the companies in our sample, the process of scoring the information provided in a category of voluntary disclosure.

4.4.2 Corporate governance characteristics and control variables

The data about corporate governance and general corporate characteristics (control variables) were collected from the reports and accounts of the companies and from the annual reports about the corporate governance of listed companies, made by the Portuguese Securities Market Commission (CMVM, 2008) and the Spanish Securities Market Commission (CNMV, 2008) for the year of 2007. We divided the corporate governance characteristics in two major categories: equity ownership structure and directors' and supervisors' structures, as explained previously. To characterize the equity ownership structure we analyse the ownership concentration, namely through the analysis of the biggest shareholder, the biggest five shareholders and the significant participations[29]. To examine the level of management ownership we analysed the capital owned by the

[28] As explained previously, we followed the same disclosure index calculation method employed in other disclosure studies, such as Ho and Wong (2001) and Chau and Gray (2002).
[29] We considered significant participations as: shareholders that have, direct or indirectly, more than 2% of share capital and the shares hold by other shareholders that exercise significant influence on company's life.

board and, finally, we analysed the presence of the state in the companies' capital. To characterize the directors' and supervisors' structures we used variables that are related with the board composition, the management incentives and the monitoring and control structures.

To characterize the board composition we analysed the number of independent directors, the number of non-executive directors, the size of the board and the board competency or expertise. To characterize the management incentives we used variables related with the board remuneration. We examined the variable part of the remuneration, as well as other kinds of remuneration incentives like funds and pension plans, share option plans, health or life insurances or other financial instruments. Related with the monitoring and control structures we assemble information about the existence of an audit committee, of a remuneration committee, of an internal audit function, of a corporate governance commission and, finally, we verified if the external auditor was one of the "Big 4"[30] audit firms. To create a continuous variable related to the monitoring and control structures of the firm, we built an index, that we call a 'control and monitoring index', measured by the firm's individual score on monitoring and control issues (5 indicators: Remuneration committee, Corporate governance commission, Audit committee, Internal audit function and Big 4)[31].

A summary of the used variables to characterize the corporate governance is provided in table 4.2. We also identified some recent studies that used similar measures.

[30] "Big 4": PriceWaterHouseCoopers; Deloitte; KPMG; Ernst&Young.
[31] If all 5 structures of monitoring and control exist in the company, the company will recieve a score of 5, which corresponds to a value of 1 or 100% on the index.

Table 4.2 Variables that characterize the ownership structure and the directors' and supervisors' structures

Variable		Definition	Studies
Equity ownership structure			
Ownership concentration	(MAINSHARE)	Proportion of capital owned by the biggest shareholder	Eng and Mak (2003) Davidson *et al.* (2005) Arcay and Vázquez (2005) Petersen and Plenborg (2006) Wang *et al.* (2008) Lazarides *et al.* (2009)
	(MAINFIVE)	Proportion of capital owned by the biggest five shareholders	
	(SIGNIFICANT)	Proportion of capital owned by significant participations	
Management ownership	(DIRCAP)	Proportion of capital owned by members of the board	
	(DIROWNER)	Binary variable which took the value of 1 if directors own shares of the company and 0 if otherwise	
State ownership	(STATEOWNER)	Binary variable which took the value of 1 if the state owned shares of the company and 0 if otherwise	
	(CAPSTATE)	Proportion of capital owned by the state	
Director's and supervisors' structures			
Board characteristics	(INDEP)	Number of independent members of the board divided by the total number of members	Yermack (1996) Peasnell *et al.* (2001) Ho and Wong (2001) Bhojraj and Sengupta (2003) Eng and Mak (2003) Ferris *et al.* (2003) Anderson *et al.* (2004) Arcay and Vázquez (2005) Ashbaugh-Skaife *et al.* (2006) Chung-Cheng Hsu (2007)
	(NONEXEC)	Number of non-executive members of the board divided by the total number of members	
	(BSIZE)	Number of members of the board divided by the natural logarithm of total assets	
	(EXPERTISE)	Average number of other societies in which board members exercise management functions	
	(VARREM)	Variable remuneration of the board divided by the total remuneration	
	(OTHERREM)	Value of other types of remuneration (stock option plans, insurances,…) divided by the total remuneration of the board	
	(DIRCOMP)	Proportion of board's remuneration that is not fixed[32]	

[32] Sum between the value of variable remuneration and the value of other types of remuneration, divided by the total remuneration.

Table 4.2 - Variables that characterize the ownership structure and the directors' and supervisors' structures (continuation)

	Variable	Definition	Studies
Monitoring and control structures'	(AUDCOM)	Binary variable which took the value of 1 if a audit committee exists and 0 if otherwise	Ho and Wong (2001) Hermalin and Weisbach (2003) Davidson *et al.* (2005) Arcay and Vázquez (2005) Wang *et al* (2008)
	(REMCOM)	Binary variable which took the value of 1 if a remuneration committee exists and 0 if otherwise	
	(INTAUD)	Binary variable which took the value of 1 if a internal audit function exists and 0 if otherwise	
	(CORPGOVCOM)	Binary variable which took the value of 1 if a corporate governance commission exists and 0 if otherwise	
	(BIG 4)	Binary variable which took the value of 1 for Big 4 audit firms and 0 for non-Big 4 audit firms	
	(CONTROLINDEX)	Firm's individual score on monitoring and control issues divided by the total score (5 indicators: Remuneration committee, Corporate governance commission, Audit committee, Internal audit function and Big 4)	

We also examined the impact of the following corporate characteristics: firm size, leverage, performance and growth opportunities. Firm performance is measured through the return on equity (ROE) that is the net income divided by the shareholders' equity (Eng and Mak, 2003); through a second variable (PERFOR1) measured by the earnings before interests and taxes divided by total assets (Petersen and Plenborg, 2006); and a third variable (PERFOR2) measured by the earnings before interests, taxes depreciations and amortizations divided by the total assets (Ho and Wong, 2001). Company size (FSIZE) was measured in this study by the natural logarithm of total assets (Davidson *et al.*, 2005; Ho and Wong, 2001); Leverage (LEVERAGE) is the long term liabilities divided by total assets (Chau and Gray, 2002); and growth opportunities are measured by price earnings ratio (PER) that is the year-end price of ordinary shares divided by earnings per share (Eng and Mak, 2003).

4.4.3 Proxies for information asymmetry

Since the asymmetry of information of a company cannot be directly observed, literature offers a variety of ways to measure this variable. There are several studies (*e.g.* Glosten and Milgrom, 1985; Admati and Pfleiderer, 1988; Amihud and Mendelson, 1986, 1989; Welker, 1995; Brennan and Subrahmanyam, 1996; Leuz and Verrecchia, 2000; Petersen and Plenborg, 2006) that look into this issue. In our study we followed, in a particular manner, the work of Welker (1995), Leuz and Verrecchia (2000) and Petersen and Plenborg (2006).

Welker (1995) applies a bid-ask spread as a proxy for information asymmetry. Leuz and Verrecchia (2000) suggest a bid-ask spread and trading volume in firm's shares as proxies for the information asymmetry. Also Petersen and Plenborg (2006), following the studies of Welker (1995) and Leuz and Verrecchia (2000), apply the bid-ask spread and turnover ratio as two complementary proxies for information asymmetry.

The bid-ask spread is commonly thought to measure information asymmetry explicitly. The reason for this is that the bid-ask spread addresses the adverse selection problem that arises from transacting in firm shares in the presence of asymmetrically informed investors. Less information asymmetry implies less adverse selection, which, in turn, implies a smaller bid-ask spread (Leuz and Verrecchia, 2000). The turnover ratio reflects the willingness of some investors to sell shares and others to buy. This willingness to trade shares should be inversely related to the level of information asymmetry (Leuz and Verrecchia, 2000).

Following Leuz and Verrecchia (2000) and Petersen and Plenborg (2006), in our study the bid-ask spread and the turnover ratio are assumed to be proxies for information asymmetry. We followed Welker (1995) by considering a "*baseline*" spread (not conditioned on the occurrence of an information release). So, in our study the bid-ask spread (BIDASK) is the daily bid-ask spread (difference between the ask price and the bid price) average of the company in the year of 2007. The turnover ratio (TURNOVER) is the value of shares traded during the year of 2007 divided by the firm's market value of equity at the end of the year.

These proxies are averaged over a 12 month period. Thus, it covers one reporting period. This is the same procedure as adopted by Leuz and Verrecchia (2000) and Petersen and Plenborg (2006). The market data were obtained from Datastream database.

4.5 Descriptive statistics

4.5.1 Variables that characterize the ownership structure, directors' and supervisors' structures and the corporate characteristics

In table 4.3 we show the descriptive statistics of the continuous variables, in table 4.4 of the dichotomous variables and in figure 4.1 we present the economic sector distribution.

Descriptive statistics of the continuous variables show that companies in our study are widely distributed regarding to corporate size, measured by total assets, ranking from 26 millions of euros to 105 873 millions of euros. We employed the natural logarithm to account for this difference. There are also large differences in growth opportunities, measured by the price earnings ratio, and also between the leverage ratio that shows a mean of nearly 30%.

When we analyse the variables that characterize the management incentives we can see that the variable remuneration average is nearly 16% of the total board remuneration, but we observe that the minimum is nearly zero and the maximum is 73%.

Table 4.3 – Continuous variables

	N	Mean	Median	Std.Dev.	Min	Max
INDEP	140	0,262	0,273	0,187	0,000	0,750
NONEXEC	140	0,674	0,721	0,261	0,000	1,000
BNUMBER	140	10,057	9,000	4,001	3,000	22,000
BSIZE	140	0,476	0,462	0,162	0,152	0,944
EXPERTISE	140	4,107	3,000	4,619	0,000	25,000
PERFOR 1	135	0,056	0,060	0,058	-0,195	0,233
ASSETS	140	5 743	948	1,423	26	105 873
FSIZE	140	20,778	20,670	1,851	17,085	25,386
LEVERAGE	140	0,298	0,292	0,188	0,000	0,822
PER	133	25,940	18,580	26,094	2,070	170,000
VARREM	138	0,157	0,090	0,190	0,000	0,730
OTHERREM	138	0,311	0,255	0,294	0,000	1,000
CAPSTATE	140	0,008	0,000	0,045	0,000	0,327
MAINFIVE	138	0,605	0,630	0,229	0,001	0,994
MAINSHARE	138	0,390	0,325	0,246	0,050	0,993
DIRCAP	130	0,230	0,110	0,264	0,000	0,993
SIGNIFICANT	137	0,624	0,650	0,213	0,000	0,990
TURNOVER	140	1,652	1,056	2,319	0,004	19,254
BIDASK	140	0,10	0,04	0,20	0,01	1,88
CONTROLINDEX	140	0,680	0,800	0,198	0,200	1,000
ROE	139	0,097	0,140	0,292	-1,854	1,233
PERFOR 2	139	0,106	0,094	0,105	-0,481	0,588
DIRCOMP	140	0,460	0,465	0,292	0,000	1,000

Where:

INDEP is the number of independent members of the board divided by the total number of members;
NONEXEC is the number of non-executive members of the board divided by the total number of members;
BNUMBER is the number of members of the board;
BSIZE is the number of members of the board divided by the natural logarithm of total assets;
EXPERTISE is the average number of other societies in which board members exercise management functions;
PERFOR1 is the earnings before interests and taxes divided by year-end total assets;
ASSETS is the total assets (millions of euros);
FSIZE is the natural logarithm of total assets;
LEVERAGE is the long term liabilities divided by total assets;
PER is the year-end price of ordinary shares divided by earnings per share;
VARREM is the value of the variable remuneration of the board divided by the total remuneration;
OTHERREM is value of other types of remuneration to the board divided by the total remuneration;
CAPSTATE is the proportion of the shares of the company own by the state;
MAINFIVE is the proportion of the shares of the company own by the biggest five shareholders;
MAINSHARE is the proportion of the shares of the company own by the biggest shareholder;
DIRCAP is the proportion of capital owned by the board;
SIGNIFICANT include the significant participations of shareholders that have, direct or indirectly, more than 2% of share capital and the shares held by other shareholders that exercise significant influence on company's life;
TURNOVER is the value of shares traded during the year divided by the firm's market value of equity at the end of the year;

BIDASK is the daily bid-ask spread (difference between the ask price and the bid price) average of the company in the year of 2007;
CONTROLINDEX is the firm's individual score on monitoring and control issues divided by the total score (5 indicators: Corporate governance commission, Big 4, Internal audit, Audit committee and Remuneration committee);
ROE is the net income divided by the shareholders' equity;
PERFOR2 is the earnings before interests, taxes, depreciations and amortizations divided by year-end total assets;
DIRCOMP is the proportion of board's remuneration that is not fixed.

The other kind of remuneration (insurances, stock options, among others) shows us a considerable mean of 31% of total remuneration and we can observe the extreme cases of zero and 100% of the board remuneration through this kind of payment. Despite this, the results show us that the part of the remuneration that is not fixed present a mean of 46% of the total board remuneration.

The average board has approximately 10 members and includes a mean of 67% of non-executives, but only 26% are considered independent[33]. In our sample, 4 is the average number of other societies in which board members exercise management functions.

The analysis of ownership structure through the continuous variables showed us that the proportion of shares owned by the state have a low average of 0,8%, being the biggest participation in 32% of the company's shares. The mean level of ownership concentration, studied by the proportion of the shares of the company owned by the biggest shareholder, is 39%, with a minimum of 5% and a maximum of 99%. The shares held by the main five

[33] Anderson *et al.* (2004) reported, for a sample of US firms from 1993 to 1998, approximately 12 directors, 57% of whom were independent. Asbaugh-Skaife *et al.* (2006), who study US firms in 2002, reported a mean of 10 board members and 70% of independent directors. In contrast, Morales *et al.* (2010) also reported a average board of 10 members but only 29,64% of independent directors, for a sample of Spanish non-financial listed firms during 2004-2007. CMVM (2008) reported, for Portuguese listed companies in the year of 2007, 19,2% of independents members on the board. CNMV (2008) reported, for Spanhish listed companies in the year of 2007, 28,32% of independents. These data confirm that low independence is a predominant characteristic of Iberian Peninsula listed companies.

shareholders and the significant participations present a mean close to 60%. The management ownership, measured by the proportion of capital owned by the board, has a mean of 23%, but it is also widely distributed.

The mean of bid-ask spread is € 0,10, with a minimum of € 0,01 and a maximum of nearly € 1,88. The turnover ratio shows us a mean of 1,652, a value bigger than the unity. This represents that, in mean, companies' value of shares traded overcame their market value of equity.

By the analysis of the dichotomous variables we can conclude that the majority of companies in our study have an audit committee, a remuneration committee, an internal audit function and have one of the Big 4 external auditors. Otherwise, the majority of companies don't have a corporate governance commission. We can also confirm that a big number of companies have management ownership (95%) and that only 6% of the companies have state ownership.

Table 4.4 – Dichotomous variables

	N	0	%	1	%
BIG 4	140	18	12,90	122	87,10
AUDCOM	140	24	17,10	116	82,90
REMCOM	140	11	7,90	129	92,10
INTAUD	140	49	35,00	91	65,00
DIROWNER	140	7	5,00	133	95,00
STATEOWNER	140	131	93,60	9	6,40
CORPGOVCOM	140	122	87,10	18	12,90

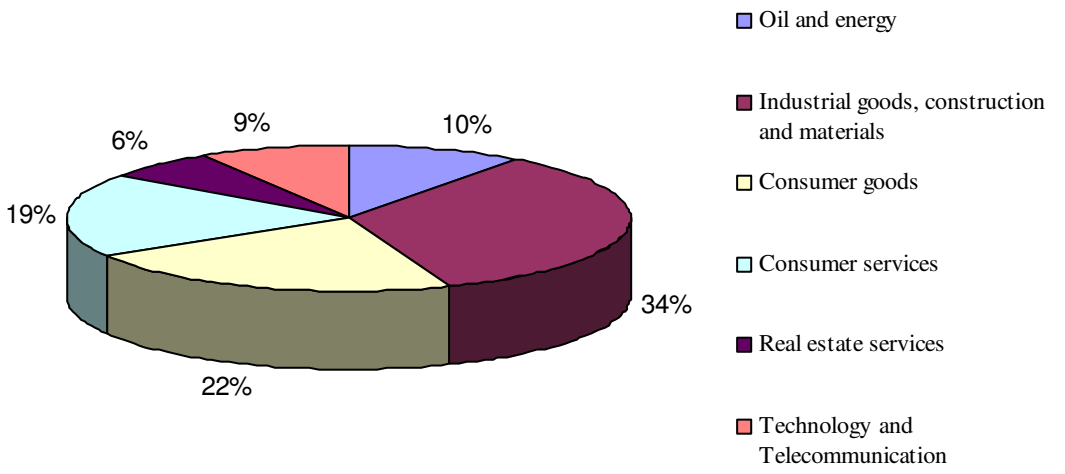
Where:

BIG 4 is a binary variable which took the value of 1 for Big 4 audit firms and 0 for non-Big 4 audit firms;
AUDCOM is a binary variable which took the value of 1 if a audit committee exists and 0 if otherwise;
REMCOM is a binary variable which took the value of 1 if a remuneration committee exists and 0 if otherwise;
INTAUD is a binary variable which took the value of 1 if an internal audit function exists and 0 If otherwise;

DIROWNER is a binary variable which took the value of 1 if directors own shares of the company and 0 if otherwise;
STATEOWNER is a binary variable which took the value of 1 if a the state own shares of the company and 0 if otherwise;
CORPGOVCOM is a binary variable which took the value of 1 if a corporate governance commission exists and 0 if otherwise.

The figure 4.1 shows us that the three main economic sectors are industrial goods, construction and materials, consumer goods and consumer services, which represent 75% of the sample[34].

Figure 4.1 – Economic sector distribution



4.5.2 Disclosure variables

4.5.2.1 The voluntary disclosure index results

For Meek *et al.* (1995) it is likely that the relevance of information varies by type. Through the analysis of the disclosure variables, which result from the application of the voluntary

[34] For Portuguese companies we used the economic sector distribution available at the Euronext Fact Book 2007 (www.euronext.com). For Spanish companies we used the economic sector distribution available at the Spanhish stock market website (www.bolsamadrid.es).

disclosure index, we can see that the score for strategy and management and production categories is significantly higher than that for marketing and human capital categories.

Table 4.5 shows us the results of the disclosure variables.

Table 4.5 – Disclosure variables

	N	Mean	Median	Std.Dev.	Min	Max
INDTOTAL	140	0,470	0,475	0,152	0,109	0,850
INDMARK	140	0,315	0,250	0,235	0,000	0,929
INDSTRA	140	0,672	0,733	0,190	0,133	1,000
INDCOMP	140	0,369	0,364	0,164	0,045	0,727
INDMANAG	140	0,577	0,583	0,197	0,182	1,000
INDFUT	140	0,383	0,375	0,180	0,000	0,813
INDHCAP	140	0,353	0,313	0,254	0,000	1,000

Where:

INDTOTAL is the proportion of the firm's individual disclosure total score on the six categories to the maximum possible score applied in those categories;
INDMARK is the proportion of the firm's individual disclosure score on marketing issues to the maximum possible score applied in those issues (7 indicators);
INDSTRA is the proportion of the firm's individual disclosure score on strategic issues to the maximum possible score applied in those issues (15 indicators);
INDCOMP is the proportion of the firm's individual disclosure score on market and competition issues to the maximum possible score applied in those issues (11 indicators);
INDMANAG is the proportion of the firm's individual disclosure score on management and production issues to the maximum possible score applied in those issues (11 indicators);
INDFUT is the proportion of the firm's individual disclosure score on future perspective issues to the maximum possible score applied in those issues (8 indicators);
INDHCAP is the proportion of the firm's individual disclosure score on human capital issues to the maximum possible score applied in those issues (8 indicators).

The total voluntary disclosure index presents a mean of 47% on the six categories included in our index. The descriptive statistics also show that companies in our study are widely distributed regarding the provision of voluntary information, with a minimum of 10,9% and a maximum of 85%.

The score for strategy is the highest score, suggesting that management considers strategy information an important issue. This result shows that strategic information has an obvious decision relevance to investors. Also Petersen and Plenborg (2006) obtained a similar result. They find strategy category to be the one with the highest score on their voluntary disclosure self constructed index for Danish listed companies.

Our results are also consistent with the work of Meek *et al.* (1995). The authors analysed the factors influencing voluntary annual report disclosures by United States, United Kigdom and Continental European multinational companies. They concluded that the disclosure of strategic information seems to reflect national or regional influences. Specifically, Continental European companies voluntarily disclose more of this type of information than either American or British companies. The authors refer that, in general, the measurement practices in most Continental European countries are conservative and often tax-determined. In this sense, Meek *et al.* (1995: 566) argue that "*perhaps these companies view disclosures of strategic information as a way to overcome a conservative bias in their measurement practices*".

Although the disclosure of strategic information was firstly focused on revealing the firms' general mission, currently its content has been expanded to corporate strategy and information on the companies' future. Also Domínguez *et al.* (2010) state that, within the information voluntarily disclosed by companies, strategic stands out. This kind of information is also widely used by finance professionals for valuation processes (Higgings and Diffenbach, 1985; AICPA, 1994). In this sense, we can state that this information can be distinguished by its capacity to differentiate the companies that act on the market.

Even though the firms of today are increasingly dependent upon intangible resources, disclosure on human capital is still one of the lowest scores (mean of 35,3%). Marketing is the category with the lowest score (mean of 31,5%). Oliveira *et al.* (2006), that constructed a voluntary disclosure index for intangibles, using Portuguese listed companies, obtained a mean of 30,3% for their index.

4.5.2.2 Description of the results of the six categories of voluntary disclosure

As explained previously, a total of 60 indicators within the six voluntary disclosure categories have been identified. By analysing the following graphics we can understand which items inside each category are more disclosed by companies.

Figure 4.2 shows the results of the 14 items considered in the strategy category. In this category the most disclosed items are the main corporate goals or objectives, detailed segment/unit performance, evaluation of the commercial risk, evaluation of the financial risk and the main events of the current year. The less disclosed items are the definition of the deadline for each corporate goal and the evaluation of other risks. These last results allow us to conclude that companies have some difficulties with the definition of schedules that can compromise the company with the users of the information. Besides that, companies don't analyse scenarios that are very different from their present reality. The results from the most disclosed strategic items show that companies attempt to give outside information that might promote the understanding of their most important success factors as well as their future strategic direction and actions.

Figure 4.2 - Strategy category

Figure 4.3 shows the results of the 11 items considered in the market and competition category. In this category the most disclosed items are the identification of the principal markets, the specific characteristics of these markets and their dimension. The less disclosed items are the identification of the main competitors, the analysis of the impact of competition on profits and also their impact on future profits. As we can see, the competitive issues, although considered by the PwC (1999) as an important *value driver*, aren't much disclosed. In general, companies disclose very little information about their main competitors, and most of them don't even attempt to identify them. In this manner, disclosure of information about the impact of competitors' activity on the companies' profits is near to residual.

Figure 4.3 - Market and Competition Category

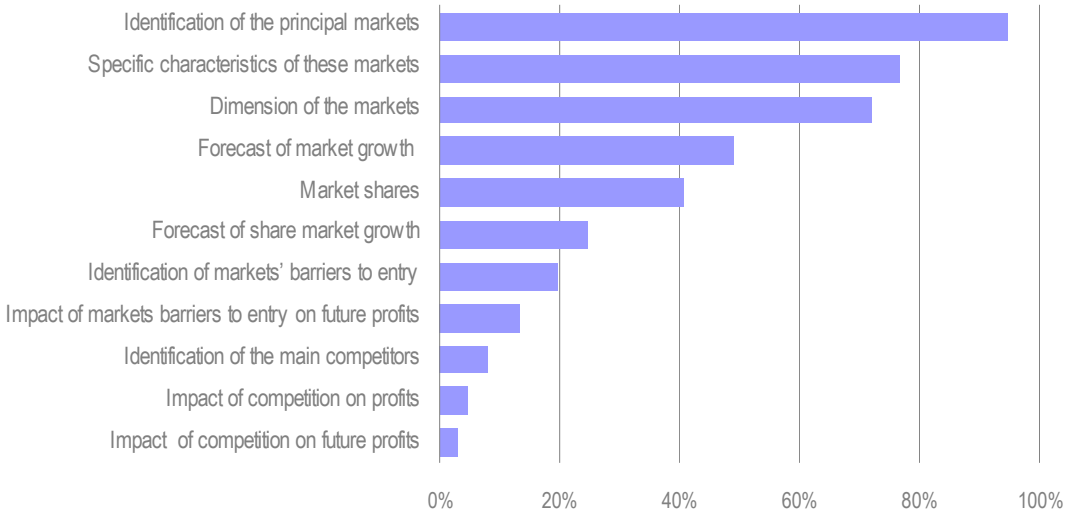


Figure 4.4 shows the results of the 11 items considered in the management and production category. In this category the most disclosed items are the identification of the principal products or services, the specific characteristics of these products or services and information about investments on production or services. The less disclosed items are the rejection/defect rates; input or output rates and the life cycle of the product (these items are considered for firms in the production industry). We can conclude that the basic aspects of production are considered by companies as issues that have a limited interest to the information users. Companies are more interested in disclosing information about possible changes in their production or services methods, in presenting new investments and attesting the norms of quality used in their production or service process.

Figure 4.4 - Management and production Category

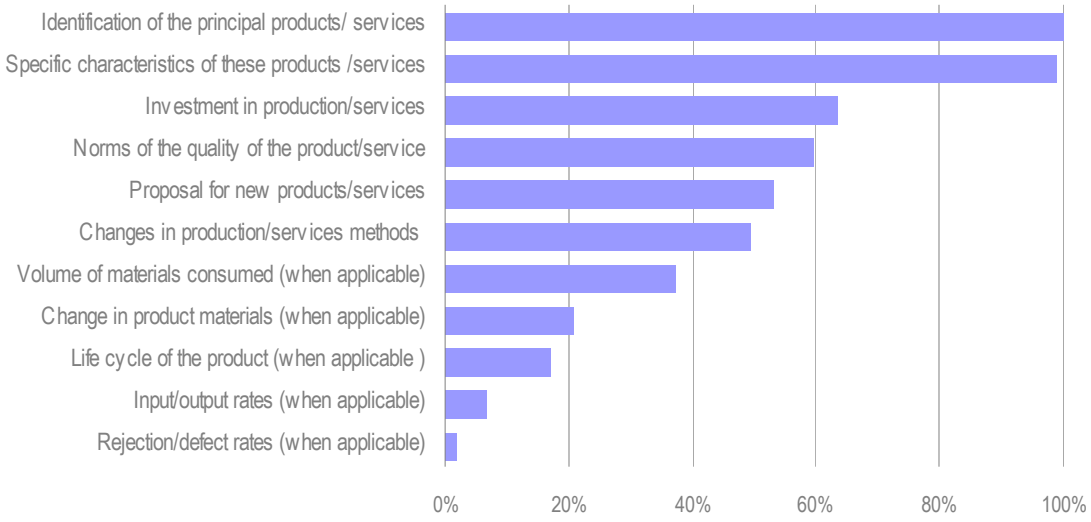
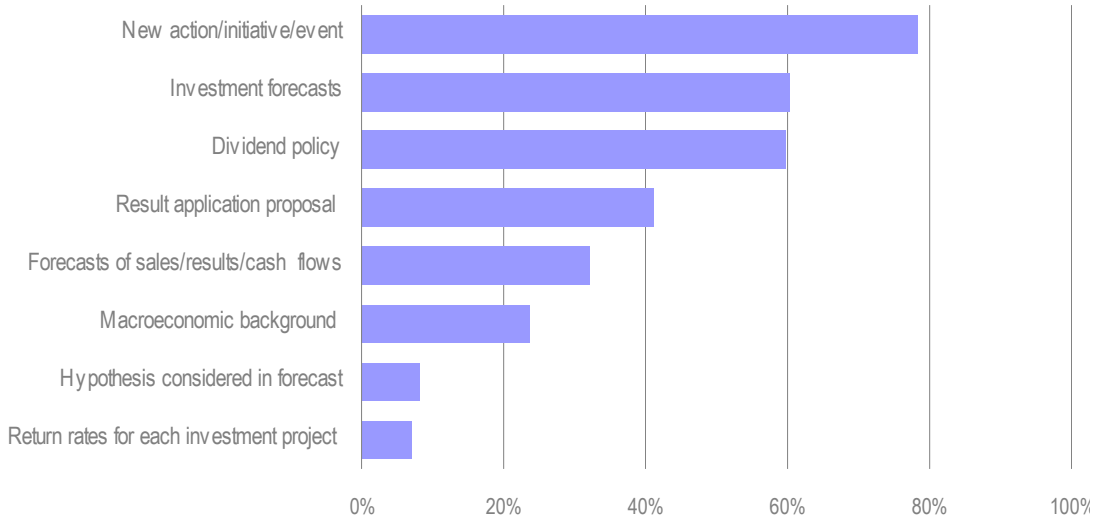


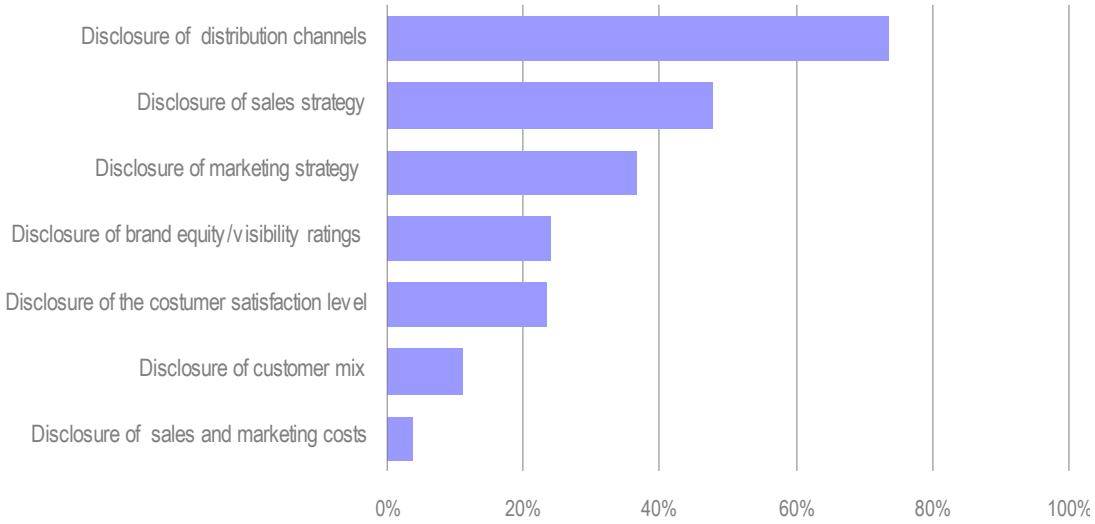
Figure 4.5 shows the results of the 8 items considered in the future perspective category. In this category the most disclosed items are new actions/initiative/event, investment forecast and information about the dividend policy of the company. The less disclosed items are the return rate for each investment project and the information about the hypotheses considered in the forecast. In fact, companies disclose a considerable amount of information about their future prospects but only in a descriptive way, which means that they don't want to assume a very stingy compromise in terms of values. Despite this, almost all the companies analysed show a common factor: they don't disclose the bases of their forecast analysis, which leaves the information users with a feeling of uncertainty.

Figure 4.5 - Future Perspective Category



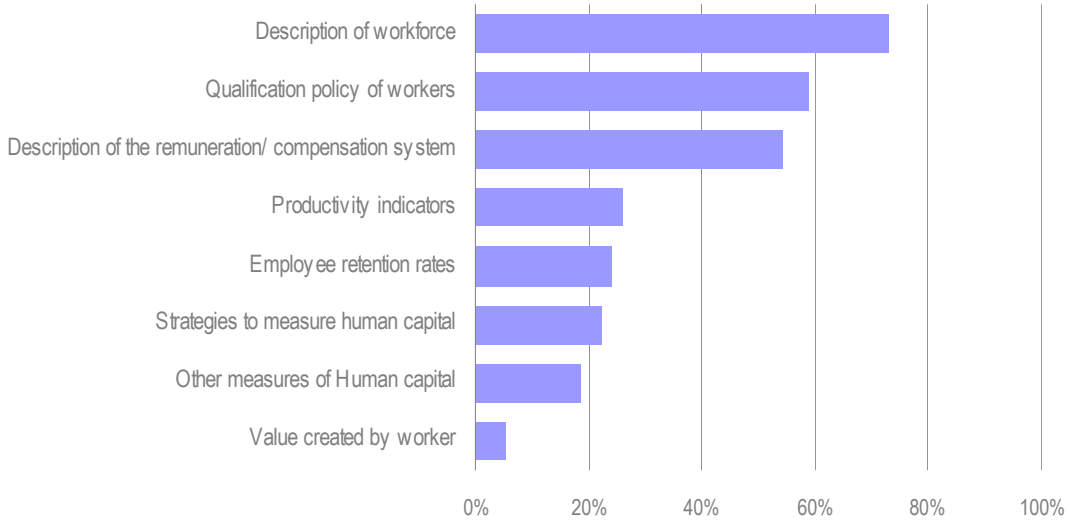
Finally, figures 4.6 and 4.7 show the results of the 7 items considered in the marketing category and the results of the 8 items considered in the human capital category, respectively. These two categories are the ones with the lowest scores. In the category of marketing the most disclosed items are the marketing strategy, the sales strategy and the distribution channels; the less disclosed items are the customer mix and the marketing costs. This category highlights the increasing dissemination of information about brand investments in order to secure the brand image of the company or product on the market.

Figure 4.6 - Marketing Category



In the category of human capital the most disclosed items are the description of the workforce, the remuneration or compensation system and the qualification policy of workers. The less disclosed items are the values created by the worker and the way to measure the company's human capital. Although this category shows one of the lowest scores, companies start to recognize that these kinds of assets, of intangible nature, need to be effectively managed to deliver future benefits and thus enable business continuity. For the management process to be developed with efficiency, companies are beginning to see that these resources should be identified, measured, recognized and disclosed.

Figure 4.7 - Human Capital Category



4.5.2.3 Assessment of validity of the voluntary disclosure index

Prior studies that used disclosure indices to investigate the determinants of corporate disclosures levels have documented consistently strong and corroborative results[35]. These prior works demonstrate that disclosure indices are a useful research tool. However, and as stated previously, disclosure level is not easily measured because the development and application of a disclosure index requires subjective assessments by the researcher when he is applying the technique (Botosan, 1997). As a result, it is important to assess the validity of the resulting measure.

Botosan (1997) supports the validity of her disclosure index, created for a sample of 122 manufacturing firms, mainly on four different sets of analyses: (1) the positive correlation

[35] For example, Buzby (1975), Chow and Wong-Boren (1987), Lang and Lundholm (1993) and Eng and Teo (1999). More recently, Eng *et al.* (2001), Eng and Mak (2003), Petersen and Plenborg (2006), Wang *et al* (2008) and Allegrini and Greco (2011).

between the categories of the disclosure index and the number of analysts following the firm during the year, considering the latter a potential proxy for the availability of corporate information; (2) the Cronbach's alpha coefficient (Cronbach, 1951), because it's a measure of internal consistency that uses repeated measurements (in this case the various categories of the disclosure index) to assess the degree to which correlation among the measurements is attenuated due to random error; (3) the correlation between the disclosure score and firm characteristics identified in prior research to be associated with disclosure level; and (4) the correlation between the disclosure score and the annual report disclosure score assigned by the AIRM, with only 24 firms that appear in both samples[36].

Because no disclosure score was available for the sample firms, this last analysis is not possible to do in our case. Despite this we compared our results with voluntary disclosure indices used in previous studies. For example, Arcay and Vázquez (2005) examined the relation between corporate characteristics, governance rules and voluntary disclosure in Spain. The authors used a voluntary disclosure index prepared by *Actualidad Económica*[37]. The mean of the disclosure index, for a sample of 91 Spanish listed companies, was 48,24%. Furthermore, and as described previously, the results from the different voluntary disclosure categories are similar with the ones found by Petersen and Plenborg (2006). Oliveira *et al.* (2006) obtained a similar result concerning the voluntary disclosure index for intangibles information.

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[36] According to Botosan (1997: 336) the results of the correlation between the disclosure score and the annual report disclosure score assigned by the AIRM "*should be interpreted cautiously for several reasons. First, statistical power is limited by the small number of firms common to both groups. Second, there is no basis for judging what the magnitude of the correlation should be (…). Finally, the analysis assumes that the AIRM score is an appropriated benchmark which may not be the case*".

[37] This business magazine publishes each year a ranking of the annual reports of the companies that trade on the Madrid Stock Exchange. Also Espinosa *et al.* (2008) used a measure of disclosure quality base on the information taken from *Actualidad Económica.*

Following Botosan (1997), we analysed the correlation of the number of analysts with the total voluntary disclosure score, as well with the six categories. The variable ANALYST is the number of analysts that followed the company during the year of 2007[38]. This number was disclosed by the companies in their annual report or in their official sites. The results are shown in table 4.6. Each of these correlations coefficients, Pearson or Spearman, is positive and statistically significant at 0.01 level.

Table 4.6 – Correlations with analysts, with Pearson (Spearman) correlations below (above) the diagonal

	INDTOTAL	INDMARK	INDSTRA	INDCOMP	INDMANAG	INDFUT	INDHCAP	ANALYST
INDTOTAL	1	0,702***	0,890***	0,672***	0,687***	0,640***	0,834***	0,565***
INDMARK	0,746***	1	0,519**	0,406***	0,563***	0,278***	0,571***	0,408***
INDSTRA	0,893***	0,535***	1	0,544***	0,564***	0,528***	0,722***	0,641***
INDCOMP	0,693***	0,407***	0,548***	1	0,252***	0,497***	0,457***	0,385***
INDMANAG	0,659***	0,547***	0,538***	0,230***	1	0,299***	0,491***	0,380***
INDFUT	0,643***	0,302***	0,531***	0,488***	0,286***	1	0,412***	0,309***
INDHCAP	0,822***	0,639***	0,685***	0,440***	0,454***	0,402***	1	0,420***
ANALYST	0,597***	0,536***	0,540***	0,416***	0,385***	0,351***	0,458***	1

*** Correlation is significant at the 0.01 level (2-tailed).

The Cronbach's alpha coefficient takes on a maximum value of one when the correlation between each pair of variables is one. Computed with standardized data, the Cronbach's alpha coefficient for the six categories of disclosure index is 0,841. There is no standard test of significance for this statistic. As a general rule, an alpha of 0,7 or 0,8, depending on the author, indicates that the correlation is attenuated very little by random measurement error (Carmines and Zellner, 1979). Thus, a Cronbach's alpha coefficient of 0,841 suggests that random measurement error could not reduce the power of the empirical tests that follow.

[38] The descriptive statistics of the variable ANALYST are: N =140; Mean = 7,46; Std. Dev. = 11,73; Min = 0; and Max = 52.

Ahmed (1995), cited by Botosan (1997), provides a meta-analysis of the results of 23 studies of the association between annual report disclosure level and firm characteristics. He found that the following four variables have a statistically significant positive association with disclosure level: firm size, leverage, exchange listing status and audit firm size. Also, Ahmed and Courtis (1999) develop a meta-analysis of 29 studies confirming the previous results. Eng and Mak (2003) find statistical significant correlations between the voluntary disclosure score and firm characteristics such as the return on equity, the firm size and leverage. Petersen and Plenborg (2006) find a negative statistical significant correlation between the voluntary disclosure score and the level of solvency. Wang *et al*. (2008) find positive statistical significant correlation with return on equity and Big 4. In our study the results from the Pearson's and Spearman's correlations are very similar to those reported by some of the previous studies (see the correlations matrices in chapter 5 in terms of direction and magnitude). Firm characteristics like firm size, leverage, performance and growth opportunities are positively correlated, with statistical significance, with the total voluntary disclosure score.

In summary, the validity of our voluntary disclosure index is based on the following points: comparison with similar studies using voluntary disclosure indices; positive statistically significant correlations between the number of analysts and the voluntary disclosure scores; an accepted value for the Cronbach's alpha coefficient; and similar results with previous studies of the correlation between the voluntary disclosure level and firm characteristics.

4.6 Descriptive statistics for Portugal and Spain

In this point we present separately the descriptive statistics for Portugal and Spain. Due to the fact that the two countries belonging to the Iberian Peninsula are part of our sample, it would be sensible to make a brief analysis of the descriptive statistics of each country in order to understand the greater or lesser homogeneity of our sample. Thus, we analyse the descriptive statistics of the Portuguese and Spanish companies by groups of variables: general corporate characteristics, director' and supervisors' structures, ownership structure, voluntary disclosure variables and, finally, information asymmetry proxies. The results are presented in table 4.7.

The results from the general corporate characteristics show us that the Spanish companies included in our sample are slightly bigger, have a bigger rate of performance and growth and a smaller debt level. In relation to the directors' and supervisors' structures, Spanish companies have bigger boards and almost double of the proportion of independent and non-executives members in relation to the Portuguese companies. The number of other societies in which board members exercise management functions (board expertise) are nearly five to Spanish companies and nearly three to Portuguese companies. The proportion of board remuneration that is not fixed (board's compensation) is 53% for Spanish companies and only 30% for Portuguese companies. There is a bigger ownership concentration in Portuguese companies, where the main shareholder has near 46% of the company shares compared to the 36% for Spanish companies. The results also show us that the presence of state is much more expressive in Portuguese companies but, on the contrary, the management ownership is bigger in Spanish companies.

Table 4.7 - Descriptive statistics for Portugal and Spain

	Country Identification	Mean	Std. Deviation
PER	Portugal	25,853	32,928
	Spain	26,256	23,740
Leverage	Portugal	0,332	0,167
	Spain	0,289	0,188
Performance 1	Portugal	0,062	0,033
	Spain	0,072	0,042
Firm size	Portugal	20,627	1,704
	Spain	21,134	1,864
Proportion of independent members of the board	Portugal	0,162	0,193
	Spain	0,301	0,172
Size of the board	Portugal	0,386	0,171
	Spain	0,509	0,147
Proportion of non-executive members of the board	Portugal	0,362	0,254
	Spain	0,788	0,141
Monitoring and control index	Portugal	0,605	0,280
	Spain	0,712	0,145
Board expertise	Portugal	2,870	2,952
	Spain	4,620	5,067
Board's compensation	Portugal	0,297	0,226
	Spain	0,531	0,285
Main shareholder	Portugal	0,459	0,237
	Spain	0,359	0,243
State ownership	Portugal	0,032	0,090
	Spain	0,003	0,021
Directors ownership	Portugal	0,101	0,189
	Spain	0,271	0,272
Total disclosure index	Portugal	0,415	0,143
	Spain	0,490	0,150
Marketing disclosure index	Portugal	0,210	0,192
	Spain	0,354	0,238
Strategy disclosure index	Portugal	0,618	0,206
	Spain	0,691	0,180
Market and competition disclosure index	Portugal	0,360	0,186
	Spain	0,372	0,155
Management and production disclosure index	Portugal	0,498	0,215
	Spain	0,606	0,181
Future perspective disclosure index	Portugal	0,388	0,193
	Spain	0,381	0,175
Human capital disclosure index	Portugal	0,264	0,184
	Spain	0,386	0,268
Turnover ratio	Portugal	0,783	0,731
	Spain	1,976	2,610
Bid-ask spread	Portugal	0,08	0,17
	Spain	0,11	0,21

The total voluntary disclosure index shows some difference between the countries, with a result of 49% for Spanish companies and 42% for Portuguese companies. The biggest differences are in the voluntary disclosure of information about marketing or management and production.

Finally, we analysed the results in what concerns to the information asymmetry proxies. We can see that the value of the turnover ratio for Spanish companies is bigger than the unity (1,98) which represents that companies' value of shares traded overcame their market value of equity. The value for Portuguese companies is lower than the unit (0,78), which reveals a less liquid market. In relation to bid-ask spread, the value for Spanish (0,11) companies is slightly bigger than the value for Portuguese companies (0,08).

We also examined whether there are statistical significant differences between the companies from both countries by conducting several multivariate analysis of variance. MANOVA is an extension of analysis of variance for use when we have more than one dependent variable. These dependent variables should be related in some way, or there should be some conceptual reason for considering them together[39]. MANOVA compares groups and the results show us if there is a significant difference between them[40]. Thus, we compared the Portuguese and Spanish companies by groups of variables[41]: corporate

[39] MANOVA works best when the dependent variables are only moderately correlated. When the dependent variables are highly correlated this is referred to as multicollinearity. Correlations up around 0,8 or 0,9 are considered a reason for concern. Because of this, we analysed the correlations between the group of dependent variables used in each MANOVA. The results showed us that we don't have any high correlation.
[40] Although the significance tests of MANOVA are based on the multivariate normal distribution, in practice it is reasonably robust to modest violations of normality (Pallant, 2001: 219).
[41] In this analysis the country variable (categorical variable) is the independent variable and the variables considered in each group will be dependent variables (continuous variables).

characteristics; director' and supervisors' structures; ownership structure: disclosure; and information asymmetry. A set of multivariate tests of significance indicate whether there are statistically significant differences among the groups on a linear combination of the dependent variables. In our case, the results relate to the test *Pillai's Trace*. This test checks whether there are significant differences between the group as a whole. Later, through *Test of Between Subjects Effects,* we analyse the statistical significance for each of the variables alone. The results are presented in appendix 5.

To analyse the governance characteristics, we tested the differences between countries on seven indicators of the directors' and supervisors' structures. The Pillai's Trace statistic showed that there are statistical significant differences in this group. The *Test of Between Subjects Effects* show statistical significant differences in all indicators. In relation to ownership structures, the Pillai's Trace statistic also showed that there are statistical significant differences in this group and, also here, the *Test of Between Subjects Effects* shows statistical significant differences in all indicators.

To analyse the differences in voluntary disclosure practices, we tested the total voluntary disclosure index as well as the six categories indices. The Pillai's Trace statistic showed that there are statistical significant differences in this group. Despite this, the *Test of Between Subjects Effects* for the six categories of voluntary disclosure show that there are two categories that don't present statistical significant differences: market and competition index and future perspective index.

We also analysed the differences in what concerns to the information asymmetry proxies. The Pillai's Trace statistic showed that there aret statistical significant differences in this group, but the *Test of Between Subjects Effects* show that only the turnover ratio shows a statistical significant difference between the two countries.

Finally, the Pillai's Trace statistic showed that there aren't statistical significant differences between the Spanish companies and the Portuguese companies in what concerns to general corporate characteristics, the so called "control variables". These last results give us a better confidence in using the companies of both countries as one single sample.

4.7 Conclusion

In this chapter we began by examining the composition of the sample, following the description of the methodology used in our data analysis. For not being a methodology so frequently used in this research area, we approached some of the main aspects related with the implementation of structural equation models.

This chapter also discussed the construction of the voluntary disclosure index. Our index included six categories of voluntary disclosure: strategy, market and competition, management and production, marketing, future perspective and human capital and we described a total of 60 items considered within the six categories. Moreover, we described the way to measure the variables related with corporate governance, general corporate characteristics and the proxies for the information asymmetry.

Following this, we made the presentation and interpretation of descriptive statistics for all variables. We proceeded to the interpretation of the results of applying the voluntary disclosure index. Through the analysis of the disclosure variables, we saw that the scores for strategy and management and production categories were significantly higher than that for marketing and human capital categories. After that we made the description of the results of the six categories of voluntary disclosure to understand which items inside each category are more disclosed by firms. Following the work of Botosan (1997), we assessed the validity of the disclosure index. Finally, we analysed separately the descriptive statistics for the Portuguese and Spanish companies.

In the following chapter we will proceed with univariate and multivariate data analysis.

Chapter 5 - Analysis and Results

5.1 Introduction

In this chapter we present and discuss the results of the univariate and multivariate data analysis.

We start with the analysis of the results from Pearson's and Spearman's correlations. After that we apply the technique of multiple regression equations to test the first group of research hypotheses about the corporate governance determinants of voluntary disclosure. Firstly, we will use the total voluntary disclosure index as the dependent variable and, secondly, we will make the same analysis using the six categories of the voluntary disclosure index. Since these six categories of voluntary disclosure reveal different aspects of the company and can be directed at different users, the variables affecting each type of disclosure are expected to differ. Consequently, it is also appropriate to examine these six categories of disclosure separately.

To test the second group of hypotheses we use a structural equation model. We intend to study the direct and indirect relation between the governance rules and information asymmetry, through the voluntary disclosure of information and organizational performance. In this point we describe the steps to the development of the proposed model. Following, we present and discuss the results from the second group of research hypotheses and analyse the decomposition of structural effects for the proxies of information asymmetry.

Finally, we analyse the impact of the different categories of voluntary disclosure on information asymmetry, with the objective of understanding if the effect of providing one type of information has a different impact on the level of information asymmetry than other type of information category. We are going to use the same structural equation model, developed previously, by modifying the voluntary disclosure construct.

5.2 Pearson's and Spearman's correlations

Table 5.1 provides the Pearson's correlation coefficients between the total voluntary disclosure score, the proxies of information asymmetry, the corporate governance variables and the corporate characteristics.

As we can see, the total voluntary disclosure score shows statistical significant correlations with most of the variables that characterize the directors' and supervisors' structures and with all corporate characteristics. We found significant positive correlations with the proportion of independent members on the board (0,213), proportion of non-executives (0,231), the board size (0,455) the board expertise (0,204), the board's compensation (0,352) and the existence of some supervising structures like the audit committee (0,323), the remuneration committee (0,254) or the Big 4 (0,303). In line with the results of Arcay and Vázquez (2005), we found that the voluntary disclosure index is associated with the adoption of some practices of good governance.

Table 5.1 – Pearson's correlations

	INDTOTAL	TURNOVER	BIDASK	PERFOR1	FSIZE	PER	LEVERAGE	INDEP	NONEXEC	BSIZE	EXPERTISE	BIG 4	AUDCOM	REMCOM	VARREM	OTHERREM	DIRCAP	STATEOWNER	MAINSHARE	CONTROLINDEX	SIGNIFICANT	MAINFIVE	PERFOR2	DIRCOMP
INDTOTAL	1																							
TURNOVER	-0,040	1																						
BIDASK	-0,221***	-0,179***	1																					
PERFOR1	0,310***	-0,339***	0,043	1																				
FSIZE	0,691***	0,007	-0,121	0,262***	1																			
PER	-0,161*	0,113	-0,098	-0,264***	-0,314***	1																		
LEVERAGE	0,296***	-0,068	-0,104	-0,118	0,545***	-0,149	1																	
INDEP	0,213**	0,213**	0,024	0,130	0,149*	-0,086	0,093	1																
NONEXEC	0,231***	0,215**	0,014	0,086	0,224***	-0,086	0,007	0,424***	1															
BSIZE	0,455***	-0,018	-0,087	0,270***	0,528***	-0,128	0,174**	0,165*	0,508***	1														
EXPERTISE	0,204**	-0,082	-0,004	0,123	0,340***	-0,199**	0,136	0,055	0,184**	0,408***	1													
BIG 4	0,303***	-0,034	-0,018	0,239***	0,306***	-0,371***	0,042	0,199**	0,244***	0,182**	0,129	1												
AUDCOM	0,323***	0,200**	0,034	0,121	0,270***	-0,054	-0,014	0,446***	0,701***	0,406***	0,060	0,335***	1											
REMCOM	0,254***	0,032	0,004	0,196**	0,174**	0,087	0,071	0,346***	0,199**	0,278***	0,088	0,126	0,149*	1										
VARREM	0,255***	-0,108	-0,094	0,147*	0,265***	-0,172*	0,186**	-0,039	-0,144*	0,065	0,069	0,089	-0,011	-0,022	1									
OTHERREM	0,180**	0,068	-0,097	0,030	0,151*	0,012	0,018	0,203**	0,368***	0,283***	0,053	0,061	0,305***	0,080	-0,347***	1								
DIRCAP	-0,086	-0,069	0,050	-0,033	-0,125	-0,009	0,027	-0,044	0,052	-0,009	-0,028	0,041	0,160*	0,064	-0,143	0,030	1							
STATEOWNER	0,161*	0,002	-0,109	0,126	0,211**	-0,040	0,117	0,082	-0,028	0,173**	-0,095	0,101	0,042	0,077	0,002	-0,030	-0,165*	1						
MAINSHARE	-0,084	-0,247***	0,125	0,025	0,056	-0,015	0,194**	-0,238***	-0,210**	-0,233***	-0,104	0,088	-0,196**	-0,051	0,123	-0,139	0,077	-0,154*	1					
CONTROLINDEX	0,423**	0,038	0,003	0,282**	0,496**	-0,192*	0,201**	0,410***	0,417***	0,441***	0,132	0,525***	0,551***	0,496***	0,130	0,133	-0,039	0,249***	-0,009	1				
SIGNIFICANT	-0,153*	-0,397***	0,274***	0,056	0,002	-0,022	0,137	-0,446***	-0,324***	-0,193**	-0,070	0,012	-0,323***	-0,032	-0,038	-0,219**	0,200**	-0,089	0,707***	-0,086	1			
MAINFIVE	-0,078	-0,322***	0,176**	0,061	0,014	-0,028	0,099	-0,337***	-0,267***	-0,128	-0,064	0,013	-0,284***	0,096	-0,021	-0,148*	0,191*	-0,153*	0,690***	-0,059	0,886***	1		
PERFOR2	0,250***	-0,426***	-0,044	0,839***	0,080	-0,128	-0,126	0,050	0,071	0,214**	0,117	0,174**	0,126	0,017	0,079	0,075	-0,023	0,058	0,002	0,155*	0,046	0,069	1	
DIRCOMP	0,352***	0,000	-0,149*	0,132	0,328***	-0,164*	0,138	0,184**	0,252***	0,318***	0,107	0,140*	0,286***	0,059	0,303***	0,788***	-0,096	-0,023	-0,055	0,235***	-0,241***	-0,162*	0,134	1

*** Correlation is significant at the 0.01 level (2-tailed); ** Correlation is significant at the 0.05 level (2-tailed);* Correlation is significant at the 0.1 level (2-tailed).

Where:

INDTOTAL is the proportion of the firm's individual disclosure total score on the six categories to the maximum possible score applied in those categories;
TURNOVER is the value of shares traded during the year divided by the firm's market value of equity at the end of the year;
BIDASK is the daily bid-ask spread (difference between the ask price and the bid price) average of the company in the year of 2007;
PERFOR1 is the earnings before Interests and taxes divided by year-end total assets;
FSIZE is the natural logarithm of total assets;
PER is the year-end price of ordinary shares divided by earnings per share;
LEVERAGE is the long term liabilities divided by total assets;
INDEP is the number of independent members of the board divided by the total number of members;
NONEXEC is the number of non-executive members of the board divided by the total number of members;
BSIZE is the number of members of the board divided by the natural logarithm of total assets;
EXPERTISE is the number of other societies in which board members exercise management functions;
BIG 4 is a binary variable which took the value of 1 for Big 4 audit firms and 0 for non-Big 4 audit firms;
AUDCOM is a binary variable which took the value of 1 if a audit committee exists and 0 otherwise;
REMCOM is a binary variable which took the value of 1 if a remuneration committee exists and 0 otherwise;
VARREM is the total of variable remuneration of the board divided by the total remuneration;
OTHERREM is the total of other type of remuneration to the board divided by the total remuneration;
DIRCAP is the proportion of capital owned by the board;
STATEOWNER is a binary variable which took the value of 1 if a the state own shares of the company and 0 otherwise;
MAINSHARE is the proportion of the shares of the company own by the biggest shareholder;
CONTROLINDEX is the Firm's individual score on monitoring and control issues (5 indicators: Big 4, Audit committee, Internal audit, Corporate governance commission, and Remuneration committee);
SIGNIFICANT include the significant participations of shareholders that have, direct or indirectly, more than 2% of share capital and the shares held by other shareholders that exercise significant influence on company's life;
MAINFIVE is the proportion of the shares of the company own by the biggest five shareholders;
PERFOR2 is the earnings before interests, taxes, depreciations and amortizations divided by year-end total assets;
DIRCOMP is the proportion of board's remuneration that is not fixed.

We found a strong positive correlation (0,691) between the firm size and the total voluntary disclosure score, which suggests that the dimension of companies is an important factor that conditions their disclosure policy. We also found a strong positive correlation with organizational performance (0,310). In relation to the ownership structure, we have a positive statistical significant correlation between the total voluntary disclosure score and the state ownership (0,161) and a significant but negative statistical significant correlation with the significant shareholders (-0,153).

The correlation between the bid-ask spread and the total voluntary disclosure score is negative (-0,221) with statistical significance at 0,01 level, which suggests that a higher level of disclosure promote more efficient prices. The correlation between the turnover ratio and the total voluntary disclosure score is non-significant, the correlation value is near to zero and has a negative sign, which is an unexpected result.

Otherwise, the results show us that the turnover ratio is strongly correlated with the variables of organizational performance and with the variables of ownership concentration. We found strong negative statistical significant correlations between turnover ratio and the variables of organizational performance (-0,339 and -0,426). In relation to ownership structures, the correlation between the turnover ratio and the main shareholder is -0,247, with the main five shareholders is -0,322 and with the significant shareholders is -0,397, all with statistical significance at 0,01 level. There are no statistical significant results with the state ownership or with the management ownership.

The turnover ratio presents very few statistical significant correlations with the variables related with director's and supervisors' structures. In the same line, there is practically no association between the bid-ask spread and the variables that characterize the directors' and supervisors' structures. In this sense, it's expected an indirect relation between directors' and supervisors' structures and the proxies of information asymmetry.

There were no statistical significant results between the state ownership or with the management ownership and the bid-ask spread. Otherwise, like with the turnover ratio, we found statistically significant correlation between the bid-ask spread and the variables

related with ownership concentration, with a positive sign. These results, therefore, show us the importance of studying the direct relation between ownership concentration and the proxies of information asymmetry.

We can also see that the variables related with ownership concentration present a negative and statistical significant correlation with the adoption of some practices of good governance, such as, the proportion of independent members of the board, the proportion of non-executives of the board and the existence of an audit committee, suggesting that firms with a big shareholder or high level of concentration shares do not achieve the same levels of compliance with recommendations of good governance as achieved by companies with widely dispersed capital. Furthermore, we can see that firm size has a statistical significant correlation with most of the variables included in our study. This fact is important to prevent future problems of multicollinearity between variables.

Table 5.2 provides Spearman's correlations. Spearman's correlation coefficient is a non-parametric statistic and can be used when there is a possibility of violation of parametric assumptions such as non-normally distributed data (Field, 2005). The correlations according to Spearman's typology come to bring a similar reading of the results based on Pearson's correlations.

Spearman's strongest correlation is also between the firm size and the total disclosure score (0,672). Otherwise, we can see that firm size present now a statistical significant correlation with the turnover ratio (0,221) and with the bid-ask spread (-0,250). These results suggest that big companies face less information asymmetries than small companies.

The result of the Spearman's correlation between the bid-ask spread and the total voluntary disclosure score is similar to the previous result using the Pearson's correlation. The correlation is negative (-0,240) and statistically significant. The main difference to detach is related with the correlation between the turnover ratio and the voluntary disclosure index. When we analyse the Spearman's correlation we can see that the result is positive (0,234) and statistically significant. This result is different from Pearson's correlation but in line with previous studies (*e.g.* Petersen and Plenborg, 2006). With Spearman's correlation we also find a positive statistical significant correlation between the bid-ask spread and management ownership (0,217) and a negative statistical significant correlation between bid-ask spread and state ownership (-0,242). The signs of these correlations are equal to Pearson's correlation but the results are now statistically significant.

Following the previous results of Pearson's correlations, the total voluntary disclosure score shows significant correlation with all control variables. In relation to the variables that characterize the directors' and supervisors' structures, we also have significant correlations with the total voluntary disclosure index, which suggest that these structures exercise an important influence on disclosure decisions. In relation to the variables that characterize the ownership structure, we found a positive statistical significant correlation with state ownership (0,176). The variables that characterize the ownership concentration (main shareholder, main five shareholders and significant participations) show a negative sign but non statistical significance with the total voluntary disclosure index.

Table 5.2 - Spearman's correlation

	INDTOTAL	TURNOVER	BIDASK	PERFOR1	FSIZE	PER	LEVERAGE	INDEP	NON EXEC	BSIZE	EXPERTISE	BIG 4	AUDCOM	REMCOM	VARREM	OTHER REM	DIRCAP	STATE OWNER	MAIN SHARE	CONTROL INDEX	SIGNIFI CANT	MAINFIVE	PERFOR2	DIRCOMP
INDTOTAL	1																							
TURNOVER	0,234***	1																						
BIDASK	-0,240***	-0,474***	1																					
PERFOR1	0,341***	-0,105	0,087	1																				
FSIZE	0,672***	0,221***	-0,250***	0,243***	1																			
PER	-0,233***	-0,028	-0,011	-0,226**	-0,315***	1																		
LEVERAGE	0,316***	0,127	-0,188**	-0,091	0,555***	-0,286***	1																	
INDEP	0,198**	0,299***	-0,107	0,194**	0,153*	-0,018	0,098	1																
NONEXEC	0,164*	0,213**	0,095	0,046	0,207**	0,101	0,011	0,287***	1															
BSIZE	0,401***	0,136	-0,076	0,284***	0,501***	-0,12	0,138	0,180**	0,504***	1														
EXPERTISE	0,188**	-0,02	-0,020	0,144*	0,314***	-0,219**	0,146*	0,083	0,312***	0,312***	1													
BIG 4	0,298***	-0,059	-0,034	0,261***	0,311***	-0,178**	0,026	0,210**	0,149*	0,164*	0,173**	1												
AUDCOM	0,307***	0,346***	0,055	0,175**	0,265***	0,083	-0,023	0,440***	0,583***	0,422***	0,029	0,335***	1											
REMCOM	0,237***	0,024	0,060	0,149*	0,188**	0,072	0,106	0,349***	0,155*	0,238***	0,119	0,126	0,149*	1										
VARREM	0,293***	0,088	-0,027	0,103	0,336***	-0,062	0,189**	-0,048	-0,126	0,137	0,114	0,091	0,017	-0,014	1									
OTHERREM	0,208**	0,172**	0,036	0,106	0,212**	-0,026	0,039	0,180**	0,431***	0,352***	0,143*	0,087	0,346***	0,093	-0,297***	1								
DIRCAP	-0,133	0,016	0,217**	-0,050	-0,157*	-0,008	-0,010	-0,002	0,094	0,066	0,059	-0,018	0,199**	0,044	-0,190**	0,135	1							
STATEOWNER	0,176**	0,068	-0,242***	0,136	0,232***	-0,017	0,128	0,087	-0,014	0,148*	-0,123	0,101	0,042	0,077	0,022	-0,025	-0,212**	1						
MAINSHARE	-0,053	-0,320***	0,136	-0,001	0,105	-0,099	0,168**	-0,248***	-0,288***	-0,280***	-0,083	0,073	-0,215**	-0,066	0,137	-0,176**	-0,126	-0,155*	1					
CONTROLINDEX	0,387***	0,155*	-0,092	0,288***	0,510***	-0,117	0,237***	0,385***	0,229***	0,380***	0,171**	0,495***	0,483***	0,420***	0,167*	0,118	-0,112	0,257***	-0,004	1				
SIGNIFICANT	-0,108	-0,505***	0,227***	-0,018	0,024	-0,033	0,128	-0,392***	-0,375***	-0,276***	-0,067	-0,01	-0,368***	-0,029	0,001	-0,200**	-0,008	-0,107	0,723***	-0,068	1			
MAINFIVE	-0,041	-0,424***	0,211**	0,04	0,047	-0,031	0,072	-0,308***	-0,297***	-0,189**	-0,064	0,011	-0,310***	0,098	0,043	-0,124	-0,008	-0,161*	0,738***	-0,053	0,887***	1		
PERFOR2	0,300***	-0,072	0,016	0,881***	0,116	-0,145	-0,147*	0,150*	0,057	0,300***	0,197**	0,214**	0,184**	0,116	0,050	0,102	-0,025	0,089	-0,044	0,236***	-0,034	0,022	1	
DIRCOMP	0,359***	0,190**	0,042	0,174**	0,354***	-0,121	0,138	0,156*	0,301***	0,348***	0,218***	0,142	0,286***	0,053	0,296***	0,769***	-0,077	-0,014	-0,088	0,210**	-0,223***	-0,141	0,113	1

*** Correlation is significant at the 0.01 level (2-tailed); ** Correlation is significant at the 0.05 level (2-tailed);* Correlation is significant at the 0.1 level (2-tailed).

Where:

INDTOTAL is the proportion of the firm's individual disclosure total score on the six categories to the maximum possible score applied in those categories;
TURNOVER is the value of shares traded during the year divided by the firm's market value of equity at the end of the year;
BIDASK is the daily bid-ask spread (difference between the ask price and the bid price) average of the company in the year of 2007;
PERFOR1 is the earnings before Interests and taxes divided by year-end total assets;
FSIZE is the natural logarithm of total assets;
PER is the year-end price of ordinary shares divided by earnings per share;
LEVERAGE is the long term liabilities divided by total assets;
INDEP is the number of independent members of the board divided by the total number of members;
NONEXEC is the number of non-executive members of the board divided by the total number of members;
BSIZE is the number of members of the board divided by the natural logarithm of total assets;
EXPERTISE is the number of other societies in which board members exercise management functions;
BIG 4 is a binary variable which took the value of 1 for Big 4 audit firms and 0 for non-Big 4 audit firms;
AUDCOM is a binary variable which took the value of 1 if a audit committee exists and 0 otherwise;
REMCOM is a binary variable which took the value of 1 if a remuneration committee exists and 0 otherwise;
VARREM is the total of variable remuneration of the board divided by the total remuneration;
OTHERREM is the total of other type of remuneration to the board divided by the total remuneration;
DIRCAP is the proportion of capital owned by the board;
STATEOWNER is a binary variable which took the value of 1 if a the state own shares of the company and 0 otherwise;
MAINSHARE is the proportion of the shares of the company own by the biggest shareholder;
CONTROLINDEX is the Firm's individual score on monitoring and control issues (5 indicators: Big 4, Audit committee, Internal audit, Corporate governance commission, and Remuneration committee);
SIGNIFICANT include the significant participations of shareholders that have, direct or indirectly, more than 2% of share capital and the shares held by other shareholders that exercise significant influence on company's life;
MAINFIVE is the proportion of the shares of the company own by the biggest five shareholders;
PERFOR2 is the earnings before interests, taxes, depreciations and amortizations divided by year-end total assets;
DIRCOMP is the proportion of board's remuneration that is not fixed.

All other results are, in general, in line with the previous results from the Pearson's correlation. We find strong negative statistical significant correlations between the turnover ratio and the variables that characterize ownership concentration, like the main shareholder (-0,320), the main five shareholders (-0,424) and the significant participations (-0,505). We find no relevant association between the bid-ask spread and the variables that characterize directors' and supervisors' structures. Also according with the previous results, we find a positive statistical significant correlation between the bid-ask spread and the variables related with ownership concentration. Finally, the variables that characterize

ownership concentration also present a negative statistical significant correlation with the variables that represent some of the good governance practices.

In appendix 6 we present the Pearson's and Spearman's correlations using each category of voluntary disclosure. In general the results are similar with the ones described previously, using the total voluntary disclosure score.

The six categories of voluntary disclosure show statistical significant correlations with most of the variables that characterize the directors' and supervisors' structures. Despite this, and considering the Pearson's correlations, an interesting result is the non statistical significance correlation between the board expertise and the disclosure of information on strategy, on market and competition and on future perspective categories. It suggests that managers that exercise management functions in other companies hesitate to offer details about their operating environment and future development plans to outside.

We found a strong positive correlation between the firm size and all the six categories of voluntary disclosure, in line with the previous results. We also found a strong positive correlation with organizational performance. In relation to the ownership structure, the state ownership presents positive statistical significant correlations with the strategy, the human capital and management and production categories.

The correlation with the bid-ask spread is negative and with statistical significance only for the categories of market and competition, strategy and future perspective, for both Pearson's and Spearman's correlations. In relation to the turnover ratio, we only find

statistical significant correlations with the voluntary disclosure categories in the Spearman's correlation. In this case, only the management and production category don't present a positive statistical significant correlation with the turnover ratio.

5.3 Multiple regression analysis

With the multiple regression analysis we intend to test the developed hypotheses about corporate governance determinants of voluntary disclosure (first group of hypotheses). According to Pallant (2001: 134) multiple regression it's a technique that can be used to "*explore the relationship between one continuous dependent variable and a number of independent variables or predictors (usually continuous)*". This technique can be used to address a multiplicity of research questions. It can tell us how well a set of variables is able to predict a particular outcome. In this case, we studied the determinants of voluntary disclosure using, firstly, the total voluntary disclosure index as the dependent variable and, secondly, we made the same analysis using the six categories of the voluntary disclosure index. In the estimation of the model we used the method *Enter* (*Standard Multiple Regression*) through the SPSS 17.0.

5.3.1 Dependent variable: total voluntary disclosure index

The following regression equations are adopted to test the developed hypotheses about the corporate governance determinants of voluntary disclosure, using as dependent variable the total voluntary disclosure index. We will test three models. Following Góis (2007), we will

start by testing a basic model. The model 1 intends to measure the impact of general corporate characteristics (control variables) on the voluntary disclosure of information, the model 2 introduces the effect of the ownership structure and model 3, as global model, tests simultaneously the impact of firm characteristics, ownership structure and directors' and supervisors' structures.

Because multicollinearity is a common problem when researchers are using this kind of models, the variance inflation factors of independent variables (VIF) are estimated for each model as a check for multicollinearity. According to Pestana and Gageiro (2005) the value that is considered the limit above of which multicollinearity exist is 10. Also the values for tolerance statistic are presented for each model. If this value is very low (near zero), then this indicates that the multiple correlation with other variables is high, suggesting the possibility of multicollinearity (Pallant, 2001:143). An evaluation of the results will be made by checking the assumptions of multiple regression.

5.3.1.1 Model 1

This model pretends to explain the impact of variables related with firm characteristics, such as firm size (FSIZE), performance (PERFOR1), leverage (LEVERAGE) and growth opportunities (PER). The regression equation of model 1 is presented below. Table 5.3 present the regression results.

$$\textbf{INDTOTAL} = \beta_0 + \beta_1 \text{ FSIZE} + \beta_2 \text{ PERFOR1} + \beta_3 \text{ PER} + \beta_4 \text{ LEVERAGE} + \varepsilon \qquad \textbf{Eq. (1)}$$

Where:

INDTOTAL is the proportion of the firm's individual disclosure total score on the six categories to the maximum possible score applied in those categories;
FSIZE is the natural logarithm of total assets;
PERFOR1 is the earnings before interests and taxes divided by year-end total assets;
PER is the year-end price of ordinary shares divided by earnings per share;
LEVERAGE is the long term liabilities divided by total assets.

Table 5.3 - Regression results – Model 1

		Eq. (1)		Collinearity Statistics	
	Pred. Sign	Stand. Coef. (β)	t-stat.	Tolerance	VIF
Constant		-0,083***	-6,135		
FSIZE	+	0,746***	8,594	0,557	1,796
PERFOR1	+	0,227***	3,177	0,821	1,218
PER	+	0,129*	1,824	0,841	1,189
LEVERAGE	+ / -	-0,082	-0,942	0,558	1,792
	R^2	0,522			
	R Adjusted	0,505			
	F-statistic	31,121***			
	Durbin-Watson[42]	2,053			

*Significant at 0.05 < p ≤ 0.10; **Significant at 0.01 < p ≤ 0.05; ***Significant at p ≤ 0.01

The most expressive coefficient has to do with the relation between the size of the company and the voluntary disclosure index, which shows a greatly positive statistical significant relation (0,746), as well as the coefficient associated to the organizational performance variable (0,227). Also the coefficient associated to the growth opportunity variable shows a positive and significant relation, with a coefficient in smaller scale (0,129) at 0,1 level of significance. Finally, the relation between *leverage* and the

[42] Durbin Watson test analyse if the residuals are independent (with proximit values of 2 autocorrelation of residue don't exist).

voluntary disclosure index, present a negative sign, with a coefficient near to zero (-0,082), with no statistical significance.

The hypothesis $\mathbf{H_{3a}}$ predicted a positive relation between companies' performance and voluntary disclosure. Our result supports the previous hypothesis. This result suggests that companies that are performing well tend to voluntarily disclose more information. To Foster (1986:32) "*profitable, well-run firms have incentives to distinguish themselves from less profitable firms in order to raise capital on the best available terms*". One way to do this is through voluntary information disclosure. In this sense, as the firm's profitability increase, managers have incentives to supply more information to the market in order to give a signal about the firm's quality. Voluntary disclosure helps investors to differentiate the high quality stocks. Following the signalling theory, it was expected that managers of companies that are performing well disclose more information about their present situation, in order to send signs to the market about the quality of the companies they manage. Furthermore, we can also analyse this result in light of the legitimacy theory. Companies with good performance feel persuaded by the social contract to perform voluntary reporting of their activities and results. This positive statistical significant relation between organizational performance and the voluntary disclosure index, found for Iberian Peninsula non-financial listed companies, corroborate previous arguments and empirical results such as Raffournier (1995) and Wang *et al.* (2008).

The hypothesis $\mathbf{H_{3c}}$ predicted a positive relation between companies' size and voluntary disclosure. Our result supports the previous hypothesis. The firm size has been found to be significantly and positively correlated with disclosure level in a number of studies,

suggesting that larger companies disclose more information than smaller companies (*e.g.* Cooke 1989 a, b; García and Monterrey, 1993; Meek *et al*., 1995; Hossain *et al,*. 1995; Camfferman and Cooke, 2002; Ho and Wong, 2001; Eng and Mak, 2003; Wang *et al.*, 2008; Domingos, 2010; Allegrini and Greco, 2011). The arguments rely on the fact large firms are closely watched by investors and have the ability to absorb extra costs for broader disclosure. Furthermore, large firms tend to have more voluntary disclosures because they need more financing capital than smaller firms. This positive statistical significant result between the firm size and the voluntary disclosure can be explained by the fact that larger firms make a more extensive use of the capital markets and have a greater number of analysts following them (Lang and Lundholm, 1993). These facts make the companies willing to provide more information to the market. Also the agency theory suggests that larger firms will have higher agency costs compared to smaller firms which require them to voluntarily disclose more information to mitigate this agency problem (Jensen and Meckling 1976). The extent of the result also shows that the firm size can be considered a major determinant of voluntary disclosure. Also Arcay and Vázquez (2005: 323) state that their findings "*reveal that corporate size is a significant determinant of corporate disclosure*". Furthermore, this result also shows that companies are worried about their legitimacy. Companies that feel more observed tend to increase the level of disclosure to keep their reputation and ensure their survival.

The hypothesis $\mathbf{H_{3d}}$ predicted a positive relation between companies' growth opportunities and voluntary disclosure. Our result supports the previous hypothesis. The arguments rely on the fact that, for a company with growth opportunities, mandated disclosure might be insufficiently to produce low information asymmetry. These companies need external

finance. In this sense, these companies will improve their voluntary disclosure of information to assure a low cost of capital. Hossain *et al.* (2005) argue that high growth firms need external equity to maintain their growth and equity providers require additional information for the estimation of equity risks. Furthermore, according to the signalling theory, companies will disclose information in order to send signs to the market.

Finally, the hypothesis $\mathbf{H_{3b}}$ predicted a relation between companies' debt and voluntary disclosure (with no predicted sign). Our result doesn't support the previous hypothesis. The level of debt does not provide an explanation for the level of voluntary disclosure. Our result is similar to Raffournier (1995), Wang *et al*. (2008) and Allegrini and Greco (2011). Other disclosure studies, like Oliveira *et al.* (2006) and Lopes and Rodrigues (2007), using Portuguese companies, find no significant influence of leverage on disclosure practices.

5.3.1.2 Model 2

The second version of the model incorporates explanatory variables associated to ownership structure. This model intends to measure the impact of variables such as management ownership (DIRCAP), state ownership (CAPSTATE) and the presence of a large shareholder (MAINSHARE). The regression equation of model 2 is presented below. Table 5.4 present the regression results.

$$\mathbf{INDTOTAL} = \beta_0 + \beta_1 \text{FSIZE} + \beta_2 \text{PERFOR1} + \beta_3 \text{PER} + \beta_4 \text{LEVERAGE} + B_5 \text{DIRCAP} + \beta_6 \text{CAPSTATE} + \beta_7 \text{MAINSHARE} + \varepsilon \quad \textbf{Eq. (2)}$$

Where:

INDTOTAL is the proportion of the firm's individual disclosure total score on the six categories to the maximum possible score applied in those categories;
FSIZE is the natural logarithm of total assets;
PERFOR1 is the earnings before Interests and taxes divided by year-end total assets;
PER is the year-end price of ordinary shares divided by earnings per share;
LEVERAGE is the long term liabilities divided by total assets;
DIRCAP is the proportion of capital owned by the board;
CAPSTATE is the proportion of the shares of the company own by the state;
MAINSHARE is the proportion of the shares of the company own by the biggest shareholder.

Table 5.4 - Regression results – Model 2

		Eq. (2)		Collinearity Statistics	
	Pred. Sign	Stand. Coef. (β)	t-stat.	Tolerance	VIF
Constant		-0,781***	-5,486		
FSIZE	+	0,733***	8,249	0,549	1,821
PERFOR1	+	0,243***	3,312	0,803	1,246
PER	+	0,076	1,053	0,837	1,195
LEVERAGE	+ / -	-0,037	-0,419	0,545	1,836
DIRCAP	-	-0,003	-0,049	0,974	1,026
CAPSTATE	+	0,006	0,095	0,940	1,063
MAINSHARE	-	-0,180***	-2,637	0,927	1,079
	R^2	0,558			
	R Adjusted	0,528			
	F-statistic	18,428***			
	Durbin-Watson	1,969			

*Significant at 0.05 < p ≤ 0.10; **Significant at 0.01 < p ≤ 0.05; ***Significant at p ≤ 0.01

In model 2 we examined the impact of three attributes of ownership structure on voluntary disclosure: managerial ownership, government ownership and the presence of a large shareholder. Only the last variable presented a statistical significant result.

The hypothesis $\mathbf{H_{1c}}$ predicted a negative relation between the presence of a large shareholder and voluntary disclosure. Our result supports the previous hypothesis. There is a negative statistical significant relation (-0,180 at 0,01 level) between the level of voluntary disclosure and the presence of a large shareholder for Iberian Peninsula

non-financial listed companies. In the presence of a large shareholder, the owner has significant involvement in the firm's management and has unlimited access to information. This fact restrains the voluntary disclosure of information to outside. Like stated previously, the Spanish and Portuguese institutional setting has in common a high level of concentration in corporate shareholdings. According to La Porta *et al.* (1999) in many countries large corporations have large shareholders and, further, these shareholders are active in corporate governance. The authors conclude that, in the case of Portugal, there are few widely held firms. Leech and Manjón (2002), on their study about corporate governance in Spain, concluded that ownership concentration is a main control mechanism. For Lopes and Rodrigues (2007) if a shareholder owns a large stake in a company, the dependence on public disclosure is likely to be smaller, because he can directly monitor management. Under the circumstance of a high level of capital ownership, the demand for information would be very low, or even absent, particularly if the manager owns all the firm's shares (Raffournier, 1995). Our result is also consistent with the result achieved by Arcay and Vázquez (2005) for Spanish companies. Their findings showed that the highest mean disclosure index corresponds to firms with widely dispersed ownership.

The hypothesis $\mathbf{H_{1a}}$ predicted a negative relation between managerial ownership and voluntary disclosure. Our result doesn't support the previous hypothesis. The relation of voluntary disclosure and management ownership is statistically non-significant, but revealed the expected negative sign. The hypothesis $\mathbf{H_{1b}}$ predicted a positive relation between government ownership and voluntary disclosure. Our result doesn't support the previous hypothesis. The relation is statistically non-significant, but also with the expected positive sign. Despite the statistical non-significance of the previous results, the signs are

in line with the predicted hypotheses and with previous findings. For example, Eng and Mak (2003) find that lower managerial ownership and significant government ownership are associated with increased disclosure. Despite this, in both cases, our results show that the beta coefficients are very near to zero, suggesting that these variables don't provide an explanation concerning the corporate disclosure decisions.

In fact, Leech and Manjón (2002: 164) state that, in Spain, "*the typically highly concentrated ownership is the central ingredient in corporate governance practices, namely the disclosure ones*". A similar conclusion can be taken for Iberian Peninsula non-financial listed companies, having in account the results presented for the variables of ownership structure.

5.3.1.3 Model 3

The third version of the model incorporates explanatory variables associated to directors' and supervisors' structures. In this sense, regression equation (3a) introduces variables such as the proportion of independent directors on the board (INDEP), size of the board (BSIZE), board compensation (DIRCOMP), board expertise (EXPERTISE) and existence of monitoring and control structures (CONTROLINDEX). We tested an alternative model with regression equation (3b), replacing the variable independent directors on the board (INDEP) for the proportion of non-executive members on the board (NONEXEC).

The regression equations of model 3 are presented below. In Table 5.5 we present the regressions results[43].

$$\mathbf{INDTOTAL} = \beta_0 + \beta_1 \text{FSIZE} + \beta_2 \text{PERFOR1} + \beta_3 \text{PER} + \beta_4 \text{LEVERAGE} + \beta_5 \text{DIRCAP} + \beta_6 \text{CAPSTATE} + \beta_7 \text{MAINSHARE} + \beta_8 \text{INDEP} + \beta_9 \text{BSIZE} + \beta_{10} \text{DIRCOMP} + \beta_{11} \text{EXPERTISE} + \beta_{12} \text{CONTROLINDEX} + \varepsilon \quad \textbf{Eq. (3a)}$$

$$\mathbf{INDTOTAL} = \beta_0 + \beta_1 \text{FSIZE} + \beta_2 \text{PERFOR1} + \beta_3 \text{PER} + \beta_4 \text{LEVERAGE} + \beta_5 \text{DIRCAP} + \beta_6 \text{CAPSTATE} + \beta_7 \text{MAINSHARE} + \beta_8 \text{NONEXEC} + \beta_9 \text{BSIZE} + \beta_{10} \text{DIRCOMP} + \beta_{11} \text{EXPERTISE} + \beta_{12} \text{CONTROLINDEX} + \varepsilon \quad \textbf{Eq. (3b)}$$

Where:

INDTOTAL is the proportion of the firm's individual disclosure total score on the six categories to the maximum possible score applied in those categories;
FSIZE is the natural logarithm of total assets;
PERFOR1 is the earnings before Interests and taxes divided by year-end total assets;
PER is the year-end price of ordinary shares divided by earnings per share;
LEVERAGE is the long term liabilities divided by total assets;
DIRCAP is the proportion of capital owned by the board;
CAPSTATE is the proportion of the shares of the company own by the state;
MAINSHARE is the proportion of the shares of the company own by the biggest shareholder;
INDEP is the number of independent members of the board divided by the total number of members;

[43] Since Pearson's correlation showed that firm size (FSIZE) is correlated with most of the other variables, we followed Raffournier (1995) and Morales *et al.* (2010) and tested the results of the regression equation (3a) when removing the control for firm size. According to Raffournier (1995: 275), "*size probably captures most of other influences because of high correlation with many variables. Size has been used as proxy for many influences*". We saw that variables such as board size (Pearsons' correlation of 0,528) and control and monitoring index (Pearsons' correlation of 0,496) show high correlations with the firm size and present a positive statistical significant relation with the voluntary disclosure index. Otherwise, the variables related with organizational performance, large shareholder and board compensation still present a statistical significant relation with voluntary disclosure, even in the absence of the variable firm size. Despite this, we are going to consider the results of equation (3a) because the VIF values fall within acceptable levels regarding the problem of multicollinearity.

NONEXEC is the number of non-executives members of the board divided by the total number of members;
BSIZE is the number of members of the board divided by the natural logarithm of total assets;
DIRCOMP is the proportion of board's remuneration that is not fixed;
EXPERTISE is the number of other societies in which board members exercise management functions;
CONTROLINDEX is the firm's individual score on monitoring and control issues divided by the total score (5 indicators: Corporate governance commission, Big 4, Internal audit, Audit committee and Remuneration committee).

Table 5.5 - Regression results – Model 3

		Eq. (3a)			Eq. (3b)		
	Pred. Sign	Stand. Coef. (β)	t-stat.	VIF	Stand. Coef. (β)	t-stat.	VIF
Constant		-0,845***	-5,460		-0,840***	-5,448	
FSIZE	+	0,743***	6,703	2,749	0,741***	6,794	2,754
PERFOR1	+	0,245***	3,267	1,270	0,251***	3,405	1,254
PER	+	0,129*	1,834	1,251	0,126*	1,717	1,242
LEVERAGE	+ / -	-0,054	-0,446	1,884	-0,049	-0,541	1,866
DIRCAP	-	0,017	0,257	1,047	0,015	0,230	1,044
CAPSTATE	+	0,013	0,191	1,314	0,014	0,193	1,177
MAINSHARE	-	-0,201***	-2,665	1,149	-0,211***	-2,924	1,205
INDEP	+	0,041	0,542	1,332			
NONEXEC	+				0,025	0,294	1,650
BSIZE	+/ -	0,038	0,438	1,769	0,020	0,211	2,060
DIRCOMP	+	0,143**	2,049	1,126	0,144**	2,029	1,172
EXPERTISE	+ / -	-0,109	-1,436	1,338	-0,107	-1,410	1,337
CONTROLINDEX	+	0,018	0,209	1,730	0,029	0,354	1,605
R^2		0,591			0,590		
RAdjusted		0,539			0,538		
F-statistic		11,426***			11,384***		
Durbin-Watson		1,958			1,970		

*Significant at 0.05 < p ≤ 0.10; **Significant at 0.01 < p ≤ 0.05; ***Significant at p ≤ 0.01

In relation to the influence of directors' and supervisors' structures in voluntary disclosure, we can see through the results of equation (3a) that the variable related with management incentives is the one that present the most significant impact on the disclosure practices. In equation (3b) we replaced the the variable independent directors on the board (INDEP) for the proportion of non-executive members on the board (NONEXEC) but the results are very similar with the previous ones.

The hypothesis $\mathbf{H_{2d}}$ predicted a positive relation between management incentives and voluntary disclosure. Our result supports the hypothesis $\mathbf{H_{2d}}$**.** We find a positive statistical significant relation ($p<0,05$) between the variable DIRCOMP, measured by the proportion of the board's remuneration that is not fixed, and the voluntary disclosure index. This result supports the association between management incentives and voluntary disclosure practices by Iberian Peninsula non-financial listed companies. We follow the argument of Gutiérrez *et al*. (2000). Compensating board members by aligning their interests with the firm's performance suggest that the association of management compensation to performance results in a transfer of risk to management and acts as an impeditive of opportunistic behaviour. Arcay and Vázquez (2005) found a similar result for Spanish companies. The authors showed that the mean disclosure index is significantly higher for companies that have established a stock option plan as a mean of director remuneration.

We do not find a statistical significant association between board independence, board size or the existence of monitoring structures and the voluntary disclosure index, but the coefficients are positive. In this sense, our results don't support the hypotheses $\mathbf{H_{2a}}$**,** $\mathbf{H_{2b}}$**,** $\mathbf{H_{2c}}$**.** Maybe the most surprising result is the one related to board independence, presented as one of the main flags of the new philosophy of transparency and rigour of the information disclosed by listed companies. The true is that literature provides us with mixed results. For example, Lopes and Rodrigues (2007), when analysing the determinants of disclosure level in the accounting for financial instruments of Portuguese listed companies, find no relation between the proportion of independent directors and disclosure. However, the work of Arcay and Vázquez (2005), for Spanish listed

companies, showed that the disclosure index is significantly higher for companies with higher proportion of independent directors on the board.

The board expertise, with a negative sign, did not show statistical significance. So, our result doesn't support the hypotheses **H_{2e}.** The statistical non-significance may be, in part, consistent with the claim of Ferris *et al.* (2003) that busy boards are as effective as non-busy boards at monitoring, but the negative sign is not consistent with the previous correlations' results.

In conclusion, and in line with previous disclosure studies, the analysis of the multiple regression models indicate that the disclosure decisions are affected by a number of interrelated factors. The results indicate that the main determinants of voluntary disclosure are the variables related with firm size, organizational performance, growth opportunities, board compensation and the presence of a large shareholder.

Table 5.6 summarizes the results of the first group of hypotheses about the determinants of voluntary disclosure.

Table 5.6 – Summary of the results for the first group of hypotheses

Ownership structure	**Validation**
H_{1a}: Voluntary disclosure is negatively related to managerial ownership.	Not validated
H_{1b}: Voluntary disclosure is positively related to government ownership.	Not validated
H_{1c}: Voluntary disclosure is negatively related to the presence of a large shareholder.	Validated
Directors' and Supervisors' structures	
H_{2a}: Voluntary disclosure is positively related to the proportion of non-executives and independents on the board.	Not validated
H_{2b}: Voluntary disclosure is related to the size of the board.	Not validated
H_{2c}: Voluntary disclosure is positively related with the existence of monitoring and control structures.	Not validated
H_{2d}: Voluntary disclosure is positively related to management incentives.	Validated
H_{2e}: Voluntary disclosure is related to management expertise.	Not validated
General corporate characteristics	
H_{3a}: Voluntary disclosure is positively related to companies' performance.	Validated
H_{3b}: Voluntary disclosure is related to the level of companies' debt.	Not validated
H_{3c}: Voluntary disclosure is positively related with the size of the company.	Validated
H_{3d}: Voluntary disclosure is positively related with growth opportunities.	Validated

5.3.1.4 Checking the assumptions of Multiple Regression

-Sample size

Different authors tend to give different guidelines concerning the number of cases required for multiple regressions. According to Field (2005) the number o cases should be, at least, 10 cases of data for each predictor in the model. But according to Green (1991) the sample minimum should be 104 + k, where k is the number of predictors. Concerning these references, there is no problem in relation to sample size in our regression models.

-Multicollinearity

Multicollinearity exists when there is a strong correlation between two or more predictors in a regression model (Field, 2005). According to the author, one way of identifying multicollinearity is to verify the correlation matrix of the predictors variables and see if any correlate very highly (by very highly the author mean correlations of above 0,80 or 0,90). The Pearson's correlation matrix showed that firm size (FSIZE) is correlated with most of the other predictors. Despite this, the biggest correlation value is 0,545. SPSS produces various collinearity diagnostics. The common are the VIF and the *tolerance* statistic. Like stated previously, the VIF indicates whether a preditor has a strong linear relationship with other predictor. Also Myers (1990) suggests that a value of 10 is a good value at which to worry. Related to VIF is the *tolerance* statistic, which also can be measured as 1/VIF. According to Field (2005) values below 0,1 indicate serious problems, although Menard (1995) suggests that values below 0,2 are worthy of concern. None of the previous models

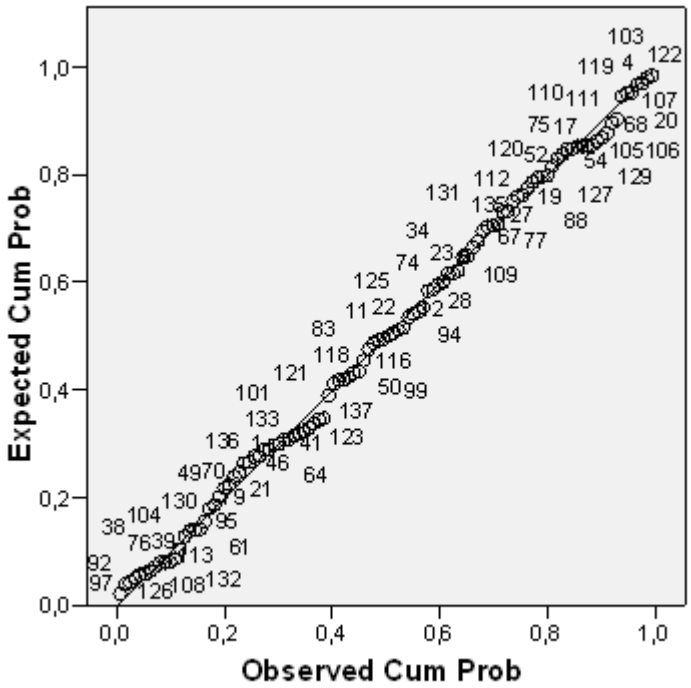
presented a value for the VIF near 10. The biggest value was 2,749 for firm size in equation (3a). In this sense, the lower value for tolerance statistic was 0,364 (1/2,749) for the same predictor.

-Normality, linearity, homoscedasticity, outliers and independence of residuals

According to Pallant (2001) one of the ways that these assumptions - normality, linearity, homoscedasticity, outliers and independence of residuals - can be checked is by inspecting the residuals Scatterplot and the Normal Probability Plot of the regression standardized residuals. Residuals are the differences between the obtained and the predicted dependent variable scores. The residual scatterplots allow us to check: normality (the residuals should be normally distributed about the predicted dependent variable scores); linearity (the residuals should have a straight-line relationship with predicted dependent variable scores); and homoscedasticity (the variance of the residuals about the predicted dependent variable scores should be the same for all predicted scores).

In the Normal Probability Plot it is expected that the points will lie in a reasonably straight diagonal line from bottom left to top right. We made this analysis for each model. The Normal Probability Plot for the global model, equation (3a), presented in figure 5.1, shows us no major deviations from normality.

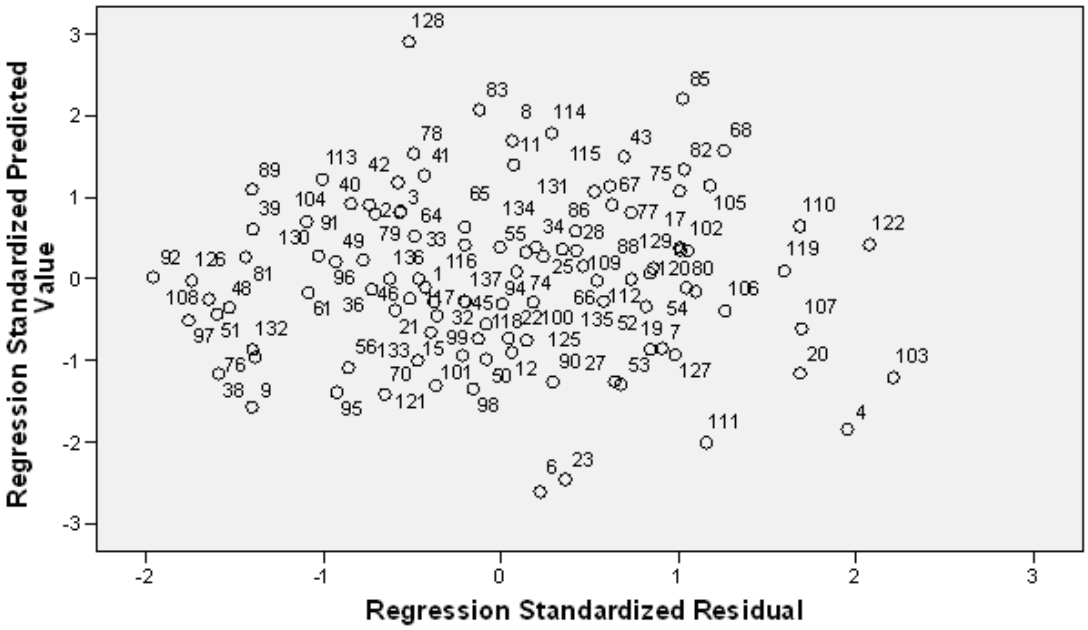
Fig 5.1- Normal probability plot for the global model



The Scatterplot of the global model, equation (3a), is presented in figure 5.2. We can see that the standardized residuals are roughly rectangularly distributed, with most of the scores concentrated in the center (along the zero point). According to Pallant (2001) in deviations from a centralised rectangle suggest violation of the previous assumptions.

The presence of outliers can also be detected from the Scatterplot, but it is easier if we analyse the residual statistics. Tabachnick and Fidell (1996) define outliers as cases that have a standardized residual of more than 3,3 or less than -3,3.

Fig 5.2 - Scatterplot of the global model



The table 5.7 shows the residual statistics, removed from the SPSS output of the global model, equation (3a), give us the minimum (-1,960) and the maximum value (2,208) for the standardized residuals. According to Field (2005) '*normally distributed errors*' means that the residuals in the model are random, normally distributed variables with a mean of zero. This table also shows us that the residuals have a mean of zero.

Table 5.7 – Residuals Statistics

	Minimum	Maximum	Mean	Std. Deviation
Predicted Value	0,1868147	0,8258994	0,4892326	0,11584960
Std. Predicted Value	-2,610	2,906	0,000	1,000
Adjusted Predicted Value	0,1776905	0,8340068	0,4883669	0,11678414
Residual	-0,20062263	0,22593746	0,00000000	0,09643193
Std. Residual	-1,960	2,208	0,000	0,942

Dependent Variable: Total voluntary disclosure index

For any two observations the residual terms should be uncorrelated (or independent). This eventuality is sometimes described as a lack of autocorrelation. According to Field (2005) this assumption can be tested with the Durbin-Watson test, which tests for serial correlations between errors. The test statistic can very between 0 and 4 with a value of 2 meaning that the residuals are uncorrelated. According to the same author, the value should be near 2, and values less than 1 or greater than 3 are definitely cause of concern. In our case we can see that the values of Durbin-Watson test of our models are all near the value of 2.

-Evaluating the model

The coefficient of determination (usually presented by R square) is one of the most popular measures of goodness of fit. The value obtained for the R square of the model 3 (equation 3a) was 0,591. This tells us how much of the variance in the dependent variable (total voluntary disclosure index) is explained by the model. Given these results, we conclude that the variables considered in the model largely explain the voluntary disclosure of companies. Despite this, it's important to considerer the value of Ajusted R square, which for equation (3a) presents the value of 0,539. According to Tabachnick and Fidell (1996:164) when a small sample is involved, the R square value in the sample tends to be a rather optimistic overestimation of the true value in the population. In this case, the author state that the Adjusted R square statistic '*corrects*' this value to provide a better estimate of the true population value. Finally, the F statistic test gives us the statistical significance of the result (Pallant, 2001). For all the models, F statistic present a statistical significance at 0,01 level.

5.3.2 Dependent variable: category of voluntary disclosure index

To extend the previous analysis we plotted several multiple regressions using as the dependent variable each one of the six categories of the voluntary disclosure index. We used the model 3, equation (3a), by changing the dependent variable.

Meek *et al.* (1995) examine voluntary disclosure in different categories of information contained in annual reports of multinational corporations from the United States, United Kingdom and continental Europe. They conclude that the factors affecting a firm's disclosure decisions are expected to vary by type of information. This suggests that the determining factors affecting a firm's voluntary disclosure practices are different depending on the type of information disclosed. Table 5.8 provides the results of the regression models for each category. A first analysis allows us to conclude that we have less statistical significant determinants for each voluntary disclosure category than the ones resulting from the previous analysis of the total voluntary disclosure score. Despite this, in general, we have the same major determinants. These determinants are related with board compensation, the presence of a large shareholder, firm size, growth opportunities and organizational performance.

The firm size shows a positive statistical significant relation with all the categories of voluntary disclosure. As noted by Foster (1986: 44) "*the variable most consistently reported as significant in studies examining differences across firms in their disclosure policy is firm size*". This result confirms that firm size is significantly related to the level of information voluntarily disclosed by Iberian Peninsula non-financial listed companies. Growth

opportunities show a positive statistical significant relation with the disclosure of information about market and competition (0,203) and about management and production (0,176). Organizational performance shows a positive statistical significant relation with all the voluntary disclosure categories, exception made to the future perspective category. This last category presents no more than the firm size as the major determinant.

The presence of a large shareholder shows a negative statistical significant relation with the disclosure of information on strategy category (-0,159), management and production (-0,187), on marketing category (-0,291) and on human capital category (-0,191). In relation to these last two categories, also Oliveira *et al.* (2006) find evidences from the Portuguese stock market that firms with lower shareholder concentration appear to disclose more information about intangibles voluntarily.

Finally, an interesting result is the positive statistical significant relation between the board compensation and the disclosure of information on marketing category (0,207) and human capital category (0,136).

Nagar *et al.* (2003) argue that stock price-based incentives reduce managerial reluctance to disclose private information. Their results suggest that stock price-based compensation plays a role in providing managers with an incentive to improve price informativeness through disclosure. To Healy and Palepu (2001) managers have incentives to make voluntary disclosures to correct any perceived undervaluation (relative to their own information set) prior to the expiration of stock option award.

Table 5.8 – Regression results using each category of voluntary disclosure

Dependent variable	Marketing (INDMARK)	Strategy (INDSTRA)	Market and competition (INDCOMP)	Management and production (INDMANAG)	Future perspective (INDFUT)	Human capital (INDHCAP)
Constant	**-1,394*** **	**-0,715*** **	**-0,692*** **	**-0,256**	**-0,729*** **	**-1,440*** **
FSIZE	**0,575*** **	**0,696*** **	**0,530*** **	**0,293** **	**0,528*** **	**0,616*** **
	(4,541)	(5,707)	(3,708)	(2,010)	(3,716)	(5,002)
PERFOR1	**0,147***	**0,224*** **	**0,180***	**0,209***	**0,118**	**0,185** **
	(1,711)	(2,699)	(1,851)	(2,112)	(1,221)	(2,214)
PER	**0,095**	**0,102**	**0,203** **	**0,176***	**0,030**	**-0,032**
	(1,107)	(1,235)	(2,102)	(1,791)	(0,309)	(-0,380)
LEVERAGE	**-0,113**	**-0,049**	**-0,008**	**-0,056**	**0,055**	**-0,014**
	(-1,077)	(-0,483)	(-0,069)	(-0,461)	(0,467)	(-0,139)
DIRCAP	**0,106**	**-0,045**	**-0,002**	**0,042**	**-0,086**	**0,083**
	(1,358)	(-0,601)	(-0,018)	(0,469)	(-0,980)	(1,090)
CAPSTATE	**0,055**	**0,003**	**0,089**	**0,133**	**0,073**	**0,050**
	(0,674)	(0,043)	(0,967)	(1,414)	(0,797)	(0,632)
MAINSHARE	**-0,291*** **	**-0,159** **	**-0,039**	**-0,187***	**-0,021**	**-0,191** **
	(-3,320)	(-1,888)	(-0,396)	(-1,861)	(-0,210)	(-2,242)
INDEP	**0,000**	**0,058**	**0,004**	**0,069**	**-0,040**	**0,068**
	(0,000)	(0,682)	(0,040)	(0,684)	(-0,407)	(0,796)
BSIZE	**0,001**	**-0,014**	**0,055**	**0,172**	**-0,072**	**0,061**
	(0,003)	(-0,143)	(0,481)	(1,468)	(-0,631)	(0,617)
DIRCOMP	**0,207** **	**0,096**	**0,123**	**0,097**	**0,001**	**0,136***
	(2,551)	(1,231)	(1,346)	(1,038)	(0,008)	(1,729)
EXPERTISE	**-0,023**	**-0,139**	**-0,107**	**-0,102**	**-0,073**	**-0,039**
	(-0,266)	(-1,630)	(-1,072)	(-0,998)	(-0,719)	(-0,458)
CONTROLINDEX	**0,136**	**0,018**	**0,008**	**0,035**	**0,065**	**-0,111**
	(1,355)	(0,018)	(0,072)	(0,302)	(0,577)	(-1,138)
R^2	**0,446**	**0,486**	**0,293**	**0,266**	**0,303**	**0,475**
RAdjusted	**0,376**	**0,421**	**0,204**	**0,174**	**0,214**	**0,409**
F-statistic	**6,373*** **	**7,480*** **	**3,285*** **	**2,872*** **	**3,435*** **	**7,171*** **
Durbin- Watson	**1,803**	**2,009**	**2,141**	**1,978**	**1,913**	**1,832**

*Significant at 0.05<p ≤ 0.10; **Significant at 0.01<p ≤ 0.05; ***Significant at p ≤ 0.01. Test statistic below

Where:

INDTOTAL is the proportion of the firm's individual disclosure total score on the six categories to the maximum possible score applied in those categories;
FSIZE is the natural logarithm of total assets;
PERFOR1 is the earnings before Interests and taxes divided by year-end total assets;
PER is the year-end price of ordinary shares divided by earnings per share;
LEVERAGE is the long term liabilities divided by total assets;
DIRCAP is the proportion of capital owned by the board;
STATEOWNER is a binary variable which took the value of 1 if a the state own shares of the company and 0 otherwise;
MAINSHARE is the proportion of the shares of the company own by the biggest shareholder;
INDEP is the number of independent members of the board divided by the total number of members;
BSIZE is the number of members of the board divided by the natural logarithm of total assets;
DIRCOMP is the proportion of board's remuneration that is not fixed;
EXPERTISE is the number of other societies in which board members exercise management functions;
CONTROLINDEX is the firm's individual score on monitoring and control issues divided by the total score (5 indicators: Corporate governance commission, Big 4, Internal audit, Audit committee and Remuneration committee).

Otherwise, the work of Lajili and Zéghal (2005) examined the association between firm equity market values and human capital proxies, such as labour costs and estimated labour productivity and efficiency indicators and concluded that companies with valuable intangible human capital assets, particularly in terms of higher productivity and efficiency, may be undervalued in the stock market.

In this sense, and following the previous arguments, the positive statistical significant relation between the board compensation and the disclosure of information on marketing and human capital categories may suggest that board compensation, especially stock price-based incentives, induce managers to provide additional information, namely information on intangibles assets, on a voluntary basis, as a way to boost the market stock price of their companies.

In the following point we describe the development of the proposed structural equation model in order to test the second group of hypotheses.

5.4 Structural Equation Model

With a Structural Equation Model (SEM) we intend to study the direct and indirect relation between the governance rules and information asymmetry, through the voluntary disclosure of information and organizational performance. According to Hair *et al*. (1998: 592) "*the true value of SEM comes from the benefits of using the structural and measurement models simultaneously, each playing distinct roles in the overall analysis"*. The authors propose a *"seven-stage process*":

(1) developing a theoretically based model;

(2) constructing a path diagram of causal relationships;

(3) converting the path diagram into a set of structural and measurement models;

(4) analysis of aspects that affect the estimation of SEM;

(5) assessing the identification of the structural model;

(6) evaluating the estimation results;

(7) model re-specification and interpretation of the results.

5.4.1 Development of the proposed structural equation model

In the estimation and evaluation of the proposed SEM we used the EQS 6.1 software through the SPSS 17.0 and a sample of 140 non-financial listed companies from the Iberian Peninsula. The model estimation was based on the matrix of variance/covariance of the vector of observations of the standardized observed variables, which is presented in

appendix 7. The choice of standardized variables overcomes the problems in fixing the scale of the latent variables resulting from the difference in scale of the original variables, as suggested by Long (1983), O'Brien and Reilly (1995), among others. The development of our model is explained along the seven steps that are described below. We are going, in this sense, to follow the Hair *et al*. (1998) methodology in what concerns to the development of the proposed model.

5.4.1.1 Stage 1 - Developing a theoretically based model

The theoretical support of the proposed model follows the literature review, presented in chapter 2, and the arguments that supported the development of the hypotheses, presented in chapter 3. Therefore, in light of the theoretical support shown, and following the previous statistical analysis, it can be assumed that the application of structural equation model is correct for this study because the aim is to confirm the possibility of a series of simultaneous direct and indirect relations.

Following Hair *et al.* (1998) there may be three different strategies considered in the application of structural equation models[44]. Within our work we followed the development strategy. In fact, the structural equation model, originally specified on theoretical basis,

[44] On the c*onfirmatory strategy* the researcher specifies a single structural equation model and uses the technique to assess their statistical significance. On the c*ompetitive strategy* the researcher compares the estimated initial model with different alternative models, looking for one that best fits the data. Finally, the d*evelopment strategy* differs from the previous two because although it proposes an initial model, the purpose of the modelling effort is to better improve itself through changes in the structural and measurement models. In many applications of this type of strategy, the theory serves only as a starting point for developing a model that as well as theoretically justified may also have empirical support (Hair *et al*., 1998: 590- 592).

was gradually redesigned to maintain its theoretical justification and to be, simultaneously, supported by the empirical data collected meanwhile.

The proposed structural equation model will be estimated following an approach that involves two steps. Initially, the measurement model will be estimated and evaluated and, subsequently, the structural model. This strategy of estimating the SEM in two steps is recommended, among others, by Anderson and Gerbing (1988), Hatcher (1994), Schumacker and Lomax (1996) and Hair *et al*. (1998). In the initial evaluation of the measurement models, our attention turns to how each latent variable is being measured by the selected indicators with the purpose of verifying whether it will fit well to the data collected in the sample.

5.4.1.2 Stage 2 - Constructing a path diagram of causal relationships

The path diagram, formed to schematically represent the structural equation model proposed in this study, was presented in figure 3.1 (chapter 3). Four of the six constructs are endogenous[45] ("voluntary disclosure", "organizational performance", "turnover" and "bid-ask"), meaning they are determined by one or more of the others, existing two exogenous constructs ("directors' and supervisors' structures" and "ownership structure"), which function as independent variables that are not predicted by any other variable included in the model. We established two correlations, the first between the two

[45] An "endogenous" construct or variable is the dependent or outcome variable in at least one casual relationship. In terms of a path diagram, there are one or more arrows leading *into* the endogenous construct or variable. An "exogenous" construct or variable acts only as a predictor or "cause" for other constructs or variables in the model. In path diagrams, the exogenous constructs have only causal arrows leading out of them and are not predicted by any other construct in the model (Hair *et al*., 1998: 580).

exogenous constructs that represent the "governance rules" and the second between the two constructs that represent proxies of information asymmetry on the market[46].

According to Hair *et al.* (1998) the path diagrams are based on two assumptions, which should be noted. Firstly, any causal relationships between constructs are represented, and its inclusion or exclusion to be justified theoretically (for these authors it's very important to justify why it's considered a causal relationship). The second is related to the assumption that all relations between the constructs are linear, so it is not possible to estimate nonlinear relationships when we use this technique.

5.4.1.3 Stage 3 - Converting the path diagram into a set of structural and measurement models

In the third stage we have to define our measurement model in specific terms[47]. To specify the measurement model, we started with an exploratory factor analysis and determined the internal consistence of each construct through the Cronbach alfa[48], as well as the percentage of variance explained. These results, as well as the indicators for each construct included in the structural equation model, are shown in table 5.9.

[46] Although in this study we consider two proxies for information asymmetry in the market, due to their different nature, it seemed more enriching to analyse the impact of our model in each one of them separately. This fact results in the creation of two constructs with only one indicator.

[47] In this model, η represents the endogenous latent variables (constructs) and ξ represents the exogenous latent variables (constructs).

[48] The Cronbach's alpha is a commonly used measure of reliability for a set of two or more construct indicators. Values range between 0 and 1, with higher values indicating higher reliability among the indicators. It's also common to accept that the Cronbach's alpha value should be above 0,7.

Table 5.9 – Indicators for each construct included in the structural equation model

Constructs	Indicators	Cronbach's alpha	Variance Explained
Directors' and supervisors' structures ξ_1	(X_1) Proportion of independent directors on the board (INDEP) (X_2) Size of the board (BSIZE) (X_3) Board's compensations (DIRCOMP) (X_4) Proportion of non-executive directors on the board (NONEXEC) (X_5) Board expertise (EXPERTISE) (X_6) Monitoring and Control index (CONTROLINDEX)	0,703	0,414
Ownership structure[49] ξ_2	(X_7) Significant participations (SIGNIFICANT) (X_8) Main shareholder (MAINSHARE) (X_9) Main five shareholders (MAINFIVE)	0,903	0,830
Voluntary disclosure η_1	(Y_1) Voluntary disclosure index in strategy (INDSTRA) (Y_2) Voluntary disclosure index in market and competition (INDCOMP) (Y_3) Voluntary disclosure index in management and production (INDMANAG) (Y_4) Voluntary disclosure index in future perspective (INDFUT) (Y_5) Voluntary disclosure index in marketing (INDMARK) (Y_6) Voluntary disclosure index in human capital (INDHCAP)	0,841	0,560
Org. performance η_2	(Y_7) Return on equity (ROE) (Y_8) Performance 1 (PERFOR1) (Y_9) Performance 2 (PERFOR2)	0,868	0,793
Turnover η_3	(Y_{10})Turnover ratio (TURNOVER)	___	1
BidAsk η_4	(Y_{11}) Bid-ask spread (BIDASK)	___	1

Where:

INDEP is the number of independent members of the board divided by the total number of members;
BSIZE is the number of members of the board divided by the natural logarithm of total assets;
DIRCOMP is the proportion of board's remuneration that is not fixed;
NONEXEC is the number of non-executive members of the board divided by the total number of members;
EXPERTISE is the number of other societies in which board members exercise management functions;
CONTROLINDEX is the Firm's individual score on monitoring and control issues (5 indicators: Big 4, Audit committee, Internal audit, Corporate governance commission, and Remuneration committee);
SIGNIFICANT include the significant participations of shareholders that have, direct or indirectly, more than 2% of share capital and the shares held by other shareholders that exercise significant influence on company's life;

[49] Like explained previously, we included in the construct "ownership structure" variables that pretend to characterize the ownership concentration of the companies under study.

MAINSHARE is the proportion of the shares of the company own by the biggest shareholder;
MAINFIVE is the proportion of the shares of the company own by the biggest five shareholders;
INDSTRA is the proportion of the firm's individual disclosure score on strategic issues to the maximum possible score applied in those issues (15 indicators);
INDCOMP is the proportion of the firm's individual disclosure score on market and competition issues to the maximum possible score applied in those issues (11 indicators);
INDMANAG is the proportion of the firm's individual disclosure score on management and production issues to the maximum possible score applied in those issues (11 indicators);
INDFUT is the proportion of the firm's individual disclosure score on future perspective issues to the maximum possible score applied in those issues (8 indicators);
INDMARK is the proportion of the firm's individual disclosure score on marketing issues to the maximum possible score applied in those issues (7 indicators);
INDHCAP is the proportion of the firm's individual disclosure score on human capital issues to the maximum possible score applied in those issues (8 indicators);
ROE is the net income divided by the shareholders' equity;
PERFOR1 is the earnings before Interests and taxes divided by year-end total assets;
PERFOR2 is the earnings before Interests, taxes, depreciations and amortizations divided by year-end total assets;
TURNOVER is the value of shares traded during the year divided by the firm's market value of equity at the end of the year;
BIDASK is the bid-ask spread average of the company (difference between the ask price and the bid price during the year).

We also performed a confirmatory factor analysis (CFA) of measurement model for the exogenous latent variables ("directors' and supervisors' structures" and "ownership structure"), since it was in these constructs that we encountered more difficulties to define the indicators. According to Byrne (1994) confirmatory factor analysis procedures are used in testing the validity of the indicator variables. The results of the CFA for the exogenous latent variables are presented in the appendix 8. The analysis of the standardized estimation of the measurement model coefficients and the goodness-of-fit measures allowed us to validate the chosen indicators.

Following the confirmatory factor analysis, we proceed to the mathematical formulation of the *path diagram.* Given the indicators presented previously to measure each of the constructs, we start by formulating the measurement models for latent exogenous variables and latent endogenous variables, which affects each of these indicators to measure the respective latent variable. The mathematical formulation of the path diagram of our model

is described below, first of the measurement model (A), second of the structural model (B), and finally the correlation among constructs (C).

(A) The Measurement Model

i) Measurement model for the latent exogenous variables

$$\begin{bmatrix} X_1 \\ X_2 \\ X_3 \\ X_4 \\ X_5 \\ X_6 \\ X_7 \\ X_8 \\ X_9 \end{bmatrix} = \begin{bmatrix} \lambda_{1,1} & 0 \\ \lambda_{2,1} & 0 \\ \lambda_{3,1} & 0 \\ \lambda_{4,1} & 0 \\ \lambda_{5,1} & 0 \\ \lambda_{6,1} & 0 \\ 0 & \lambda_{7,2} \\ 0 & \lambda_{8,2} \\ 0 & \lambda_{9,2} \end{bmatrix} \times \begin{bmatrix} \xi_1 \\ \xi_2 \end{bmatrix} + \begin{bmatrix} \delta_1 \\ \delta_2 \\ \delta_3 \\ \delta_4 \\ \delta_5 \\ \delta_6 \\ \delta_7 \\ \delta_8 \\ \delta_9 \end{bmatrix}$$

ii) Measurement model for the endogenous latent variables

$$\begin{bmatrix} Y_1 \\ Y_2 \\ Y_3 \\ Y_4 \\ Y_5 \\ Y_6 \\ Y_7 \\ Y_8 \\ Y_9 \\ Y_{10} \\ Y_{11} \end{bmatrix} = \begin{bmatrix} \lambda^y_{1,1} & 0 & 0 & 0 \\ \lambda^y_{2,1} & 0 & 0 & 0 \\ \lambda^y_{3,1} & 0 & 0 & 0 \\ \lambda^y_{4,1} & 0 & 0 & 0 \\ \lambda^y_{5,1} & 0 & 0 & 0 \\ \lambda^y_{6,1} & 0 & 0 & 0 \\ 0 & \lambda^y_{7,2} & 0 & 0 \\ 0 & \lambda^y_{8,2} & 0 & 0 \\ 0 & \lambda^y_{9,2} & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix} \times \begin{bmatrix} \eta_1 \\ \eta_2 \\ \eta_3 \\ \eta_4 \end{bmatrix} + \begin{bmatrix} \varepsilon_1 \\ \varepsilon_2 \\ \varepsilon_3 \\ \varepsilon_4 \\ \varepsilon_5 \\ \varepsilon_6 \\ \varepsilon_7 \\ \varepsilon_8 \\ \varepsilon_9 \\ 0 \\ 0 \end{bmatrix}$$

Since Y_{10} is a single indicator of the latent variable η3 (turnover) and Y_{11} is a single indicator of the latent variable η4 (bid-ask) we can admit, in both cases, that the indicator

measures without error the latent variable in question, supposing that the elements $\lambda^{y}_{10,3}$ e $\lambda^{y}_{11,4}$ of the matrix Λx are equal to one and that the measurement error is zero[50].

In other cases we considered, explicitly, that each one of the indicators is a partial and incomplete measure of the latent variable that is measured, by admitting that the same variable is measured by more than one indicator and that each one of these is measuring it with error.

(B) Structural Model

In the structural model we specified structural relationships between latent variables. Having regarded the model formulated previously, this specification requires intending directional relationships between the latent exogenous variables and endogenous latent variables, as well as, causal relationships among the last.

$$\begin{bmatrix} \eta_1 \\ \eta_2 \\ \eta_3 \\ \eta_4 \end{bmatrix} = \begin{bmatrix} 0 & \beta_{1,2} & 0 & 0 \\ 0 & 0 & 0 & 0 \\ \beta_{3,1} & \beta_{3,2} & 0 & 0 \\ \beta_{4,1} & 0 & 0 & 0 \end{bmatrix} \times \begin{bmatrix} \eta_1 \\ \eta_2 \\ \eta_3 \\ \eta_4 \end{bmatrix} + \begin{bmatrix} \gamma_{1,1} & \gamma_{1,2} \\ \gamma_{2,1} & \gamma_{2,2} \\ \gamma_{3,1} & 0 \\ 0 & \gamma_{4,2} \end{bmatrix} \times \begin{bmatrix} \xi_1 \\ \xi_2 \end{bmatrix} + \begin{bmatrix} \zeta_1 \\ \zeta_2 \\ \zeta_3 \\ \zeta_4 \end{bmatrix}$$

(C) Correlations among constructs.

[50] In the case of latent variables, which are measured by a single indicator, it's not possible to empirically determine the measurement error. Thus, the estimation of the model requires that the measurement error be secure. In our case, we fixed it at zero, being one of the procedures that can be found in the literature to continue in the estimation and evaluation of the model (*e.g.* Augusto, 2003).

There are two correlations matrices pertaining to the structural equations. The first denotes the correlations among the exogenous constructs.

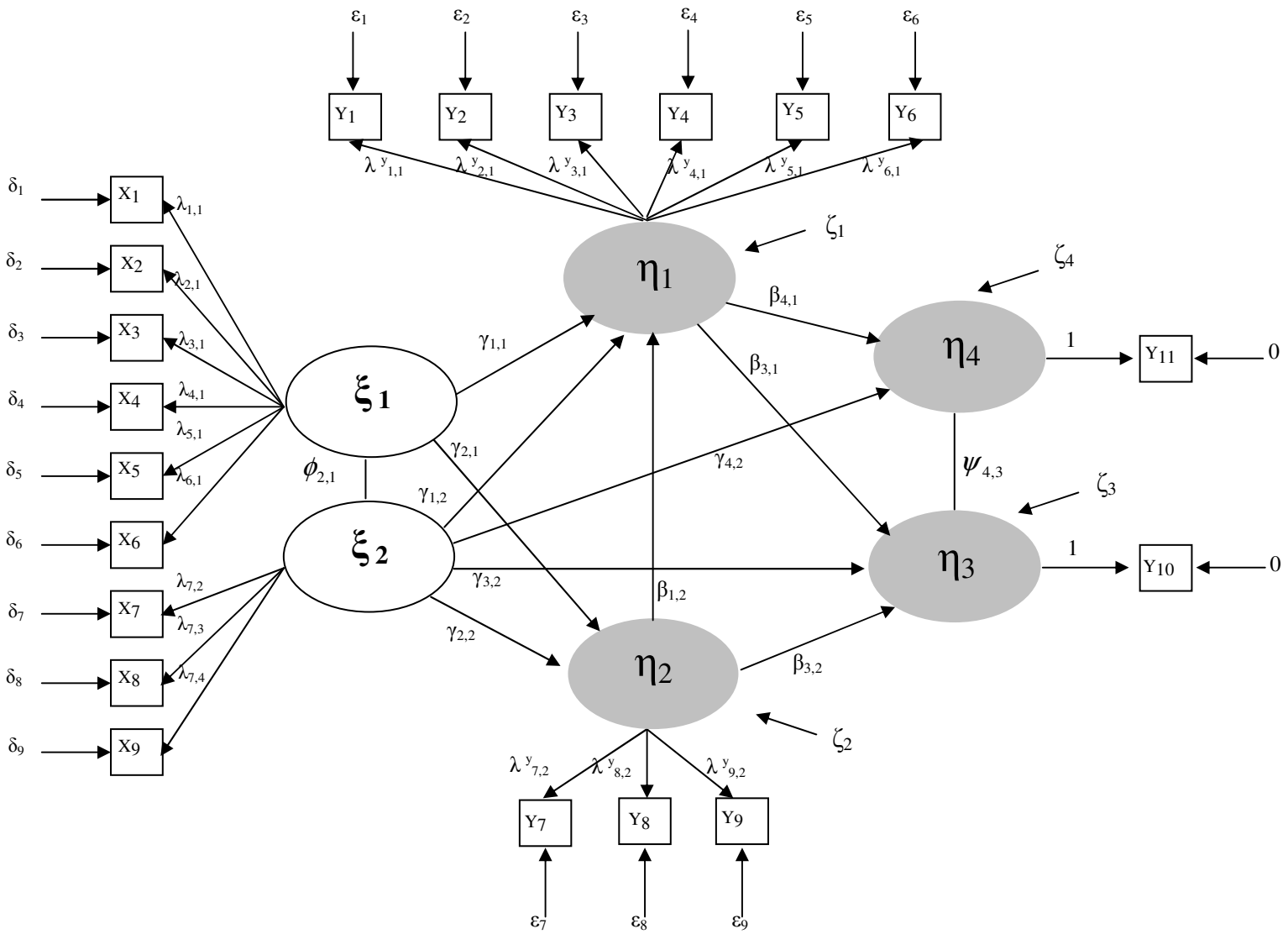
$$\Phi = \begin{bmatrix} 1 & \\ \phi_{2,1} & 1 \end{bmatrix}$$

The second denotes the correlations among two endogenous constructs.

$$\Psi = \begin{bmatrix} 1 & & & \\ 0 & 1 & & \\ 0 & 0 & 1 & \\ 0 & 0 & \psi_{4,3} & 1 \end{bmatrix}$$

Figure 5.3 represents in a schematic manner, the measurement and structural models corresponding to the proposed structural equation model.

Fig. 5.3 – Schematic representation of the proposed model



5.4.1.4 Stage 4 – Analysis of aspects that affect the estimation of SEM

The structural equation models differ from other types of multivariate statistical analysis because of only using the matrices of variances/covariances or correlations as input data and not individual observations. This happens because the main focus of this multivariate analysis is not in the set of individual observations, but the pattern of relations between them (Hair *et al.,* 1998). As stated previously, our model estimation was based on the matrix of variance/covariance of the vector of observations of the standardized observed variables.

In the table 5.10 are the *Skewness* (a measure of symmetry) and *Kurtosis* (a measure of the '*peakedness*') for each of the observed variables of our measurement model. These statistics characterize the distribution of data on the asymmetry and the 'peakedness' and are commonly used to ascertain whether the distribution of a given variable moves away from a normal distribution. The analysis of these statistics shows that only two variables deviate from the recommended levels of acceptance. Augusto (2003) followed upper boundaries of 3,0 for Skewness and 20,0 for Kurtosis as indicators of univariate normality. The variable "Turnover ratio" shows a value of 26,258 for the Kurtosis and a value of 4,390 for Skewness. The "Bid-ask spread" has a value of 38,032 for the Kurtosis and the value of 5,421 for Skewness.

Table 5.10 – *Skewness* and *Kurtosis*

Constructs	Variable	Skewness	Kurtosis
Directors' and supervisors' structures ξ_1	(x1) Proportion of independent directors on the board	0,210	-0,649
	(X2) Size of the board	0,490	0,426
	(X3) Board's' compensations	0,011	-0,904
	(X4) Proportion of non-executive directors on the board	-1,276	1,076
	(X5) Board expertise	2,214	6,229
	(X6) Monitoring and Control index	-0,649	0,007
Ownership structure ξ_2	(X7) Significant participations	-0,648	0,192
	(X8) Main shareholder	0,508	-0,730
	(X9) Main five shareholders	-0,426	-0,424
Voluntary disclosure η_1	(Y1) Voluntary disclosure index in strategy	-0,656	-0,277
	(Y2) Voluntary disclosure index in market and competition	-0,004	-0,706
	(Y3) Voluntary disclosure index in management and production	0,109	-0,498
	(Y4) Voluntary disclosure index in future perspective	0,047	-0,490
	(Y5) Voluntary disclosure index in marketing	0,862	-0,154
	(Y6) Voluntary disclosure index in human capital	0,528	-0,698
Org. performance η_2	(Y7) Return on equity	-2,881	18,730
	(Y8) Performance 1	-0,908	3,474
	(Y9) Performance 2	0,385	12,975
Turnover η_3	(Y10)Turnover ratio	4,390	26,258
BidAsk η_4	(Y11) Bid-ask spread	5,421	38,032

Where:

INDEP is the number of independent members of the board divided by the total number of members;
BSIZE is the number of members of the board divided by the natural logarithm of total assets;
DIRCOMP is the proportion of board's remuneration that is not fixed;
NONEXEC is the number of non-executive members of the board divided by the total number of members;
EXPERTISE is the number of other societies in which board members exercise management functions;
CONTROLINDEX is the Firm's individual score on monitoring and control issues (5 indicators: Big 4, Audit committee, Internal audit, Corporate governance commission, and Remuneration committee);
SIGNIFICANT include the significant participations of shareholders that have, direct or indirectly, more than 2% of share capital and the shares held by other shareholders that exercise significant influence on company's life;
MAINSHARE is the proportion of the shares of the company own by the biggest shareholder;
MAINFIVE is the proportion of the shares of the company own by the biggest five shareholders;
INDSTRA is the proportion of the firm's individual disclosure score on strategic issues to the maximum possible score applied in those issues (15 indicators);
INDCOMP is the proportion of the firm's individual disclosure score on market and competition issues to the maximum possible score applied in those issues (11 indicators);
INDMANAG is the proportion of the firm's individual disclosure score on management and production issues to the maximum possible score applied in those issues (11 indicators);
INDFUT is the proportion of the firm's individual disclosure score on future perspective issues to the maximum possible score applied in those issues (8 indicators);
INDMARK is the proportion of the firm's individual disclosure score on marketing issues to the maximum possible score applied in those issues (7 indicators);
INDHCAP is the proportion of the firm's individual disclosure score on human capital issues to the maximum possible score applied in those issues (8 indicators);

ROE is the net income divided by the shareholders' equity;
PERFOR1 is the earnings before Interests and taxes divided by year-end total assets;
PERFOR2 is the earnings before Interests, taxes, depreciations and amortizations divided by year-end total assets;
TURNOVER is the value of shares traded during the year divided by the firm's market value of equity at the end of the year;
BIDASK is the bid-ask spread average of the company (difference between the ask price and the bid price during the year).

For Kline (1998) there is no clear guideline that indicates when the violation of the hypothesis of non-normality is problematic, when the basic assumptions of the estimation methods that their results are based on are violated, but it is accepted to be particularly important to analyse the robustness of the SEM.

In our case, since the violation of normality is not very extensive, and taking into account the issues mentioned above about the different estimation methods, we decided to use the maximum likelihood (ML) estimation method. However, we will also use an extremely valuable feature unique to the EQS program that is the availability of robust statistics that can be associated with the maximum likelihood estimation. By specifying "ME=ML, ROBUST", the output will provide a robust chi squared statistic (χ^2) and robust standard errors, both of which have been corrected for non-normality.

5.4.1.5 Stage 5 - Assessing the identification of the structural model

In the SEM estimation process the most likely cause for the computer program "*blowing up*" or producing meaningless or illogical results is the identification of the structural model. Identification needs arise when the parameters don't have a unique determination

because there is insufficient information in the matrix of variances/covariances of the sample (Hair *et al*., 1998).

The proposed structural equation model is identifiable. He meets the "*three-measure rule*", since all constructs have at least three indicators. Exception made by the constructs that represent proxies of information asymmetry that, by having only one indicator, work in practice as observed variables. To check the "order condition"[51] we calculate the number of degrees of freedom, which was done using the following formula (Hair *et al.,* 1998):

$$df = \frac{1}{2}\left[(p+q)(p+q+1)\right] - t$$

where:

df = degrees of freedom
p = the number of endogenous indicators,
p = the number of exogenous indicators,
t = the number of estimated coefficients in the proposed model

The model originally proposed features 158 degrees of freedom, calculated as follows:

$$df = \frac{1}{2}\left[(11+9)(11+9+1)\right] - 52$$

[51] The "Order Condition" states that the model's degrees of freedom must be greater than or equal to zero (Hair *et al*., 1998).

The final model has 161degrees of freedom, calculated as follows:

$$df = \frac{1}{2}\left[(11+9)(11+9+1)\right] - 49$$

5.4.1.6 Stage 6 - Evaluating the estimation results

In sixth stage, which follows the estimation of the parameters of the proposed model, we proceed to evaluate the quality of the estimates and of the model as a whole, by checking its empirical and theoretical validity. Although we have many goodness-of-fit measures, we are only going to use some of them, following some authors' recommendations. As we state previously, according to Fan *et al.* (1999) all measures overestimate goodness of fit for small samples (< 200), though RMSEA and CFI are less sensitive to sample size than others.

Kline (1998) recommends the analysis of at least four tests, such as chi-square; Goodness-of-fit Index (GFI), Normed Fit Index (NFI) or Comparative Fit Index (CFI); Tucker-Lewis Index (TLI); and Root Mean Square Error of Approximation (RMSEA). By convention, CFI should be equal to or greater than 0,90 to accept the model, indicating that 90% of the co-variation in the data can be reproduced by the given model. By convention, TLI should be equal to or greater than 0,90 to accept the model. According to Schumacker and Lomax (2004) there is good model fit if RMSEA less than or equal to 0,05. Other researchers state that there is adequate fit if RMSEA is less than or equal to 0,08. Hu and Bentler (1999)

have suggested RMSEA less or equal to 0,06 as the cut-off for a good model fit. Schumacker and Lomax (1996) defend values close to 0,9 for the GFI index.

The Normed Chi-square is the chi-square divided by degrees of freedom, in an attempt to make it less dependent on sample size. Carmines and McIver (1981) state that Normed Chi-square should be in the 2:1 or 3:1 range for an acceptable model. Ullman (2001) states that 2 or less reflects a good fit. Kline (1998) argues that 3 or less is acceptable. Some researchers allow values as high as 5 to consider a good model fit (*e.g.* Schumacker and Lomax, 2004) while others insist that the Normed Chi-square should be 2 or less.

Following the previous recommendations, in our model we are going to analyse the values for the Normed Chi-square, CFI, GFI, RMSEA and TLI. Table 5.11 shows us the considered goodness of fit tests for the initial model[52].

Table 5.11 – Goodness of Fit Tests - Initial Model

Normed Chi-squared *(χ^2/df)*	(205,780 / 158) =1,302
CFI (Comparative Fit Index)	0,952
GFI (Goodness-of-fit Index)	0,855
RMSEA (Root-Mean-Square Error of Approximation)	0,051
Tucker-Lewis index (TLI)	0,942

Comparing these results with what the literature has suggested, so that the proposed model can be considered adequately adjusted to the data, we are led to conclude that our sample is well described by our model. All the measures we considered are within acceptable levels

[52] As explained before, we also used a robust method to avoid possible problems related with the non-fulfilment of the normality conditions of variables. The results were very similar with the ones using the maximum likelihood estimation: Normed Chi-squared = 1,39; CFI = 0,92; TLI = 0,90; RMSEA = 0,06.

taking into account the recommendations outlined above. Just GFI indicator is slightly below the reference value for some authors, *i.e.*, 0,9.

In addition to these measures of overall evaluation of the model, we conducted an analysis of the elements of the matrix of variance/covariance of standardized residuals. The standardized residuals represent the differences between the observed co-variance and the estimated covariance matrix. Residual values greater than ± 2,58 are considered statistically significant at the 0,05 level. Significant residuals indicate a substantial prediction error for a par of indicators (*i.e.* one of the covariances in the original input data) (Hair *et al.,* 1998). To accept the proposal model, the authors recommend that the residual values greater than ± 2,58 should not exceed five percent of the number of standardized residuals. Our matrix of variances/covariances of standardized residuals, presented in appendix 9, don't present any value greater than the described limit.

Once the overall model fit has been evaluated, it's important to examine in more detail each of its component parts: (A) the measurement model and (B) structural model.

(A) Measurement model fit

Regarding the measurement model, its evaluation will allow us to perceive how the unobservable or latent variables were measured by the indicators selected for purposes of measurement. It is recommended the analysis of: (i) the reliability and the validity of the observed variables (indicators), and (ii) the reliability of the latent variables (constructs).

(i) reliability and validity of the observed variables (indicators)

The analysis of the reliability of each indicator is allowed by the multiple correlation coefficients, R^2 (Hatcher, 1994). This measure of reliability reflects the percentage of the variance of the indicator that is explained by the latent variable. Although it is generally agreed that the higher the R^2 the greater the reliability of the indicator in question, there is no threshold.

The indicators that measure the same latent variable must have a convergent validity, this means that, on the one hand, a significant correlation between them and, on the other hand, the coefficients that express the directional relationships between indicators and latent variables, which those are measuring, should all be significant. From the practical point of view, this analysis is possible by testing the significance of coefficients that express those relationships (Hatcher, 1994). In the cases that statistical significance is not achieved, "*the researcher may wish to eliminate the indicator or attempt to transform it for better fit with the construct*" (Hair *et al.*, 1998: 612). Another important dimension in assessing the measurement model is the analysis of the sign and magnitude of the estimated coefficients.

According to Hair *et al.* (1998) is very important when we are evaluating the results to make an inspection for "offending estimates". These are estimated coefficients in either the structural or measurement models that exceed acceptable limits. The most common examples of offending estimates are: (1) negative errors; (2) standardized coefficients exceeding the unity; (3) very large standard errors associated with any estimated

coefficient. A problem of this nature must first be resolved before proceeding to the evaluation/interpretation of any specific results from the model.

The standardized estimation of the measurement model coefficients are shown in table 5.12. We made the analysis of the offending estimates and verified the non existence of negative errors. The results also show us that we don't have any standardized coefficient that exceeds unity and we didn't find any very large standard error associated with any estimated coefficient. In addition, all coefficients have the expected sign.

Regarding the value of R^2 for each indicator, and although it is agreed that the higher the value the better the indicator, in our case it varies from 0,100 for the X_6 indicator and 0,941 for the Y_8 indicator.

The results also show us the statistical significance of each indicator within each one of its constructs. If all the coefficients are significant, there is evidence that all indicators affected to the same construct are effectively measuring it (Anderson and Gerbing, 1988). As shown in the table 5.12, all indicators show a statistical significance at 0,01 levels, which supports the hypothesis of convergent validity for all indicators.

Table 5.12 – Standardized estimation of the measurement model coefficients – initial model

	η_1 Voluntary disclosure	η_2 Org performance	η_3 Turnover	η_4 Bid-ask	ξ_1 Directors' and supervisors' structures	ξ_2 Ownership structure	S.E.	R^2
(Y_1) INDSTRA	**0,939***** (6,939)						**0,235**	**0,883**
(Y_2) INDCOMP	**0,565***** (4,999)						**0,191**	**0,319**
(Y_3) INDMANAG	**0,574***** (6,164)						**0,162**	**0,329**
(Y_4) INDFUT	**0,600***** (5,224)						**0,205**	**0,360**
[a](Y_5) INDMARK	**0,571** -----						-----	**0,326**
(Y6) INDHCAP	**0,731***** (7,251)						**0,173**	**0,534**
(Y7) ROE		**0,679***** (8,747)					**0,066**	**0,461**
[a] (Y8) PERFOR1		**0,970** -----					-----	**0,941**
(Y9) PERFOR2		**0,866***** (12,926)					**0,043**	**0,750**
[a] (Y10) TURNOVER			**1,000** -----				-----	**1**
[a] (Y11) BIDASK				**1,000** -----			-----	**1**
(X1) INDEP					**0,532***** (4,928)		**0,144**	**0,282**
[a] (X2) BSIZE					**0,724** -----		-----	**0,524**
(X3) DIRCOMP					**0,400***** (3,802)		**0,141**	**0,160**
(X4) NONEXEC					**0,689***** (6,248)		**0,153**	**0,475**
(X5) CONTROLINDEX					**0,666***** (6,084)		**0,148**	**0,444**
(X6) EXPERTISE					**0,316***** (3,143)		**0,150**	**0,100**
(X7) QUALIFIED						**0,983***** (14,640)	**0,073**	**0,966**
(X8) MAINSHARE						**0,720***** (9,554)	**0,090**	**0,519**
[a] (X9) MAINFIVE						**0,877** -----	-----	**0,769**

*Significant at 0.05 < p ≤ 0.10; **Significant at 0.01< p ≤ 0.05; ***Significant at p ≤ 0.01
a: fixed parameters
Test statistic below

Where:

INDSTRA is the proportion of the firm's individual disclosure score on strategic issues to the maximum possible score applied in those issues (15 indicators);
INDCOMP is the proportion of the firm's individual disclosure score on market and competition issues to the maximum possible score applied in those issues (11 indicators);
INDMANAG is the proportion of the firm's individual disclosure score on management and production issues to the maximum possible score applied in those issues (11 indicators);
INDFUT is the proportion of the firm's individual disclosure score on future perspective issues to the maximum possible score applied in those issues (8 indicators);
INDMARK is the proportion of the firm's individual disclosure score on marketing issues to the maximum possible score applied in those issues (7 indicators);
INDHCAP is the proportion of the firm's individual disclosure score on human capital issues to the maximum possible score applied in those issues (8 indicators);
ROE is the net income divided by the shareholders' equity;
PERFOR1 is the earnings before Interests and taxes divided by year-end total assets;
PERFOR2 is the earnings before Interests, taxes, depreciations and amortizations divided by year-end total assets;
TURNOVER is the value of shares traded during the year divided by the firm's market value of equity at the end of the year;
BIDASK is the bid-ask spread average of the company (difference between the ask price and the bid price during the year);
INDEP is the number of independent members of the board divided by the total number of members;
BSIZE is the number of members of the board divided by the natural logarithm of total assets;
DIRCOMP is the proportion of board's remuneration that is not fixed; ROE is the net income divided by the shareholders' equity;
NONEXEC is the number of non-executive members of the board divided by the total number of members;
EXPERTISE is the number of other societies in which board members exercise management functions;
CONTROLINDEX is the Firm's individual score on monitoring and control issues (5 indicators: Big 4, Audit committee, Internal audit, Corporate governance commission, and Remuneration committee);
SIGNIFICANT include the significant participations of shareholders that have, direct or indirectly, more than 2% of share capital and the shares held by other shareholders that exercise significant influence on company's life;
MAINSHARE is the proportion of the shares of the company own by the biggest shareholder;
MAINFIVE is the proportion of the shares of the company own by the biggest five shareholders.

(ii) reliability of the latent variables (constructs).

An important measure in assessing the measurement model is the reliability of each construct. Reliability is a measure of the internal consistency of the constructs indicators, depicting the degree to which they "*indicate*" the common latent (unobserved) construct. "*More reliable measurements provide the researcher with greater confidence that the individual indicators are all consistent in their measurements*" (Hair *et al.,* 1998: 612).

Fornell and Lacker (1981), as well as Hair *et al.* (1998), propose a way to estimate the construct reliability, according to the following formula:

$$Construct\_\text{Re}liability = \frac{(\sum s\tan dardized\_loadings)^2}{(\sum s\tan dardized\_loadings)^2 + \sum \varepsilon_j}$$

Where the standardized loadings are obtained directly from the program output and ε_j is the measurement error for each indicator. The measurement error is 1,0 minus the reliability of the indicator, which is the square of the indicator's standardized loading.

Another measure of reliability, and that is a complementary measure to construct reliability measure, is the variance extracted measure. This measure reflects the overall amount of variance in the indicators accounted for by the latent construct. "*Higher variance extracted values occur when the indicators are truly representative of the latent construct*" (Hair *et al.*, 1998: 612). This measure is quite similar to the reliability measure but differs in that the standardized loadings are squared before summing them.

$$Variance\_Extracted = \frac{(\sum s\tan dardized\_loadings^2)}{(\sum s\tan dardized\_loadings)^2 + \sum \varepsilon_j}$$

Although there are no limits, unanimously accepted, for each of these measures, it is usual to suggest values above 0,7 in the case of the construct reliability, and 0,5 in the case of the variance extracted (Fornell and Lacker, 1981 and Hair *et al.,* 1998).

Table 5.13 shows us the constructs' reliability and the variance extracted calculated according to the formulas presented earlier.

Table 5.13 – Constructs' reliability and variance extracted

	η1 **Voluntary disclosure**	**η2** **Org performance**	**η3** **Turnover**	**η4** **Bid-ask**	**ξ 1** **Directors' and supervisors' structures**	**ξ 2** **Ownership structure**
Construct reliability	0,83	0,88	1	1	0,73	0,86
Variance extracted	0,46	0,72	1	1	0,33	0,75

We can see that all constructs, with more than one indicator, presented a value greater than 0,70 in relation to their reliability. The values range from 0,73 for the "directors' and supervisors' structures" construct, to 0,88 for the "organizational performance" construct. Regarding the variance extracted, we have values below 0,5, namely for the construct "directors' and supervisors' structures" and for the construct "voluntary disclosure". Despite this, as stated previously, these constructs present acceptable values regarding construct reliability.

(B) Structural model fit

Similarly to what happens in multiple regressions, also here the results may be affected because of problems with multicollinearity. In these cases we must always be aware of the

estimated correlations among constructs in the SEM results. Table 5.14 presents the correlation matrix between constructs.

Table 5.14 – Correlation matrix between constructs

	ξ_1	ξ_2	η_1	η_2	η_3	η_4
ξ_1	1					
ξ_2	-0.409	1				
η_1	0.558	-0.245	1			
η_2	0.340	-0.139	0.470	1		
η_3	0.167	-0.443	0.100	-0.193	1	
η_4	-0.239	0.282	-0.323	-0.157	-0.267	1

The analysis of this table shows that the correlations between different constructs of the model are within the acceptable limits. As referred by Hair *et al.* (1998: 613), in the case of SEM, although there is no fixed limit to define the correlations that should be considered high, "*values exceeding 0,90 should always be examined, and many times correlations exceeding 0,80 can be indicative of problems*".

According to Hair *et al.* (1998) the examination of the structural model involves the significance of the estimated coefficients. Structural equation modelling methods provide not only estimated coefficients but also standard errors and calculate t values for each coefficient. For Byrne (1998) the evaluation of each model parameter can be done through: (i) feasibility of the estimated parameter, (ii) convenience of standard deviations, and (iii) statistical significance of each of the estimated parameters. First, the parameter is acceptable if the estimated value has the correct sign and magnitude and is consistent with the theoretical guidelines. Second, very high or very small values of standard deviation, is

indicative of poor adjustment. Third, the estimated parameter should be statistically significant *i.e.* significantly different from zero.

Table 5.15 presents the standardized estimates for the coefficients expressing the directional relationship initially proposed, as well as the statistical test associated with each. The results of the estimation of the structural model revealed the absence of offending estimates.

Some of those coefficients appear non statistically significant. These coefficients express directional relationships between both exogenous and endogenous latent variables, or between the latter. As recommended by the literature, these coefficients are strong candidates for removal from the model, through re-specification, in order to improve their parsimony.

Table 5.15 - Standardized estimation of the initial structural model coefficients

	Structural Equations			
	η1	**η2**	**η3**	**η4**
	Voluntary disclosure	**Org performance**	**Turnover**	**Bid-ask**
ξ_1 Directors' and supervisors' structures	**0,449***** (3,243)	**0,401***** (3,242)		
ξ_2 Ownership structure	**-0,014** (-0,151)	**0,117** (1,104)	**-0,447***** (-5,239)	**0,217**** (2,390)
η1 Voluntary disclosure			**0,140** (1,408)	**-0,270***** (-2,703)
η2 Org performance	**0,309***** (3,008)		**-0,318***** (-3,403)	

*Significant at $0.05< p \leq 0.10$; **Significant at $0.01< p \leq 0.05$; ***Significant at $p \leq 0.01$
Test statistic below

The estimation results also show that the correlation between directors' and supervisors' structures and ownership structure (St. Beta = -0,419; $p < 0,01$) and between the turnover and the bid-ask spread (St. Beta = -0,182 ; $p < 0,05$) presented a negative sign and statistical significance. The first correlation result is consistence with the work of Mak and Li (2001). The authors analysed the determinants of corporate ownership and board structure. Their findings indicate that corporate ownership and board structures are related, and that there are significant interrelationships among board structure characteristics. The second correlation result is also consistence with the work of Petersen and Plenborg (2006). The authors also found a negative statistical significant correlation between these two proxies of information asymmetry.

5.4.1.7 Stage 7 – Model respecification and interpretation of the results

Once the model is deemed acceptable, we should examine the results for their correspondence to the proposed theory.

In our case, our model re-specification will pass through the analysis of the statistical significance of our established relationships. If a given estimated parameter is not, under the statistical point of view, different from zero, for the levels of significance considered in the analysis, there are arguments in the literature to recommend its elimination. Byrne (1998), for example, argue that these parameters are not important for the model and should therefore be eliminated in order to improve the parsimony of the model. Also Bentler and Chou (1987) recommend that the model respecification starts by considering

which of the parameters can be eliminated, because it is generally safer to eliminate parameters than to add new parameters.

In this first model the non-significant relations allow us to reject some of the developed hypotheses. We find three statistically non-significant relations.

The hypothesis $\mathbf{H_{5a}}$ predicted a negative relation between ownership concentration and voluntary disclosure. Given the previous results obtained from the multiple regression analysis methodology, an unexpected result rise from the relation between ownership structure and voluntary disclosure. Although presenting the expected negative sign, which suggests that bigger ownership concentration leads to a lower level of voluntary disclosure, this relation is statistically non-significant. Otherwise, we can see that the construct "directors' and supervisors' structures" present a positive statistical significant relation with voluntary disclosure. These results suggest that, when considering the simultaneous effect of governance rules on voluntary disclosure, the "ownership structure" construct prove to have a weaker negative effect on voluntary disclosure compared with the positive effect of the "directors' and supervisors' structures" construct. So, our result doesn't support the hypothesis $\mathbf{H_{5a}}$**.**

The hypothesis $\mathbf{H_{5d}}$ predicted a positive relation between ownership concentration and organizational performance. This relation present a positive coefficient, but also statistically non-significant. Like previously, it is the construct "directors' and supervisors' structures" that presents a positive statistical significant result in relation to organizational performance. In this sense, our result doesn't support the hypothesis $\mathbf{H_{5d}}$**.**

Finally, the hypothesis **H_{7b}** predicted a positive relation between voluntary disclosure and the turnover ratio. This relation present a positive sign, but statistically non-significant. The results of the proposed model show that the trading of shares is more related to the greater or lesser ownership concentration and with the performance of companies than with the access to information. In this sense, our result doesn't support the hypothesis **H_{7b}.**

We made the respecification of the model by withdrawing the non-significant relations. We followed the recommendations of Long (1983) and we withdrew the non-significant relations one at a time (first one that had a smaller *t* value) because changing a parameter can reduce, or even eliminate, the need to change the other parameter. After each step the model is analysed in terms of overall adjustment of the data or the level of statistical significance of each of its coefficients. The withdrawal of non-significant relations results in a further simplification of the model, remaining, however, the same "*level*" of overall adjustment, as evidenced by the values obtained for the global fit indices of the model that remain practically unchanged, as we can see in table 5.16. This result provides support for re-specification made to the model. The mathematical formulation of the final structural model is present in appendix 10.

Table 5.16 – Goodness of Fit Tests - Final Model

	Initial Model	**Final Model**
Relative Chi-squared *(χ^2/df)*	(205,780 / 158) =1,302	(207,872/161) =1,291
CFI (Comparative Fit Index)	0,952	0,953
GFI (Goodness-of-fit Index)	0,855	0,854
RMSEA (Root-Mean-Square Error of Approx.)	0,051	0,050
Tucker-Lewis index (TLI)	0,942	0,944

Drawing on these results we developed the final model, as shown in figure 5.4. In table 5.17 we show the standardized estimation of the final structural model coefficients and their statistical significance.

Figure 5.4 – Path graphic of the final model

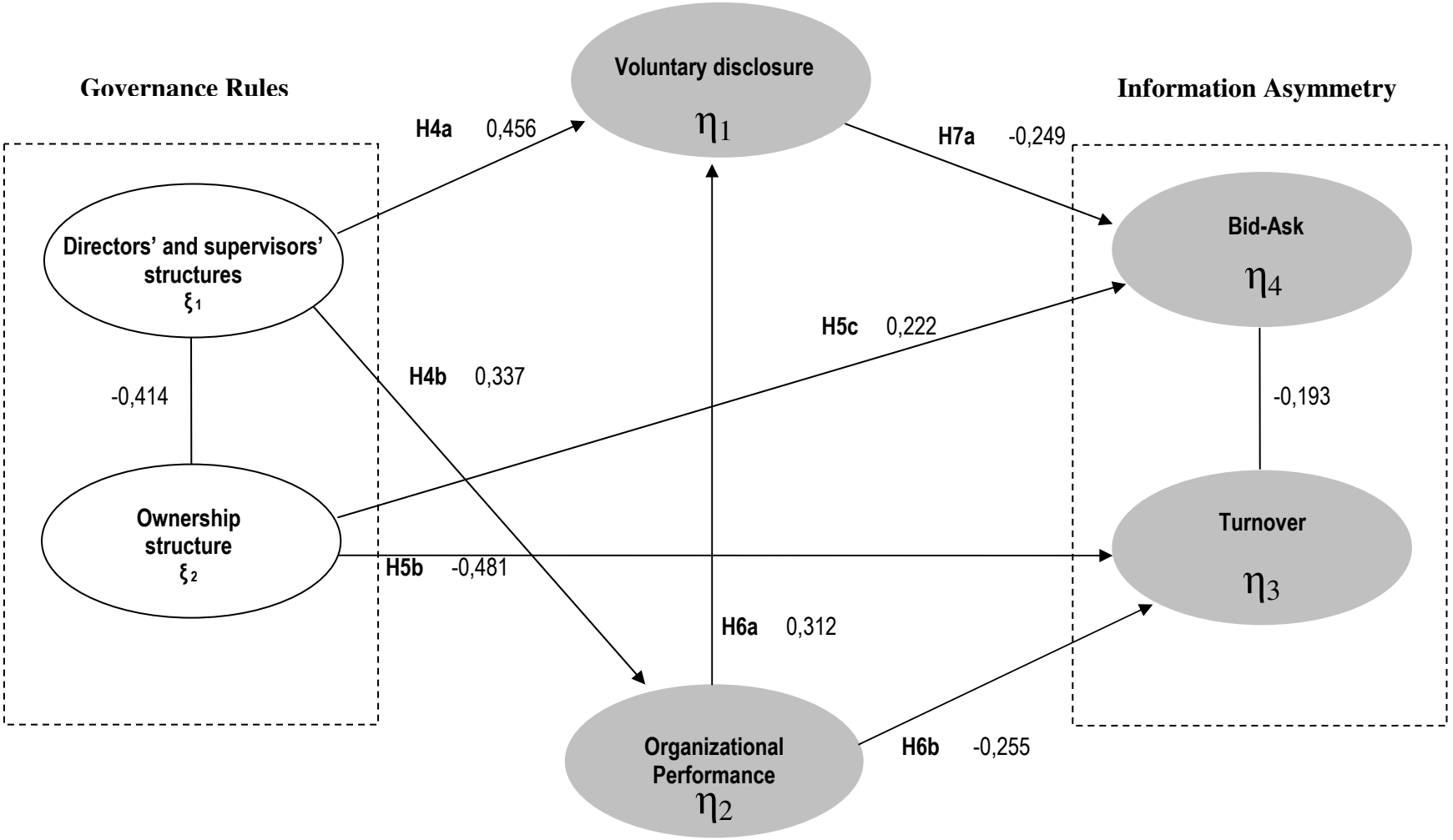


Table 5.17 – Standardized estimation of the final structural model coefficients

	Structural Equations			
	η1	**η2**	**η3**	**η4**
	Voluntary disclosure	**Org performance**	**Turnover**	**Bid-ask**
ξ_1 Director's and supervisors' structures	**0,456***** (3,622)	**0,337***** (3,119)		
ξ_2 Ownership structure			**-0,481***** (-5,621)	**0,222**** (2,429)
η1 Voluntary disclosure				**-0,249**** (-2,529)
η2 Org performance	**0,312***** (3,091)		**-0,255***** (-3,092)	

*Significant at $0.05 < p \leq 0.10$; **Significant at $0.01 < p \leq 0.05$; ***Significant at $p \leq 0.01$
Test statistic below

The final results confirm that the correlation between directors' and supervisors' structures and ownership structure (St. Beta = -0,414; $p < 0,01$) and between the turnover and the bid-ask spread (St. Beta = -0,193 ; $p < 0,05$) are both negative and statistically significant.

The hypothesis $\mathbf{H_{4a}}$ predicted a positive relation between directors' and supervisors' structures and voluntary disclosure. The hypothesis $\mathbf{H_{4b}}$ predicted a positive relation between directors' and supervisors' structures and organizational performance. The directors' and supervisors' structures present positive and statistically significant relations ($p < 0,01$) with voluntary disclosure and with organizational performance. These results suggest that the appointment of non-executive and independent directors, the dimension of the board, the board expertise, the board compensation and the formation of supervising structures are positively related to the provision of voluntary information and follow the literature that relates corporate governance characteristics to organizational performance. Klein (1998) finds significant ties between firm performance and how boards are structured. Kanagaretnam *et al.* (2007) also find that the effectiveness of the board has a significant impact on both the quantity and quality of corporate disclosures. So, our results support the hypotheses $\mathbf{H_{4a}}$ and $\mathbf{H_{4b}}$**.**

The hypothesis $\mathbf{H_{5b}}$ predicted a negative relation between ownership concentration and the turnover ratio. The hypothesis $\mathbf{H_{7b}}$ predicted a relation between organizational performance and the turnover ratio. The turnover ratio is, as stated in the previous literature review, the willingness of some investors to sell shares and others to buy. The results show that the turnover ratio is negatively related with ownership structure construct and with organizational performance. The negative relation with the ownership structure construct

suggests that a bigger ownership concentration leads to less stock transactions in the market. Following the arguments of Bolton and Von Thadden (1998), in a concentrated ownership structure the number of shareholders who can trade the stock is also smaller, which in turn reduces the liquidity of the stock. The negative relation with organizational performance suggests that shares of companies with high performances are held by shareholders for a longer period than shares of companies that present worse performances. We follow the arguments of Amihud and Mendelson (1986). Stocks of firms with higher returns are allocated in equilibrium to portfolios with longer expected holding periods. In this sense, the observed asset return must be an increasing function of the expected holding periods, it also implies that the observed asset return must be a decreasing function of the turnover rate of that asset. In this sense, our results support the hypotheses $\mathbf{H_{5b}}$ and $\mathbf{H_{7b}}$.

The hypothesis $\mathbf{H_{5c}}$ predicted a positive relation between ownership concentration and the bid-ask spread. We find a positive statistically significant relation ($p < 0,05$). This result suggests that bigger ownership concentration leads to the formation of inefficient prices in the market. In a situation of concentrated ownership, which is the case of Iberian Peninsula non-financial listed companies, the main shareholders may have access to private, valuable and relevant information about the firm. In this situation, investors mitigate losses to informed traders by charging wider spreads (Heflin and Shaw, 2000). On the contrary, the hypothesis $\mathbf{H_{7a}}$ predicted a negative relation between voluntary disclosure and the bid-ask spread. The relation between the bid-ask spread and voluntary disclosure is negative and statistically significant ($p < 0,05$), following the results obtained by Petersen and Plenborg (2006) and Espinosa *et al.* (2008). This result confirms that voluntary disclosure leads to more efficient prices and tends to reduce information asymmetries among informed and

uninformed investors (Diamond and Verrecchia, 1991; Kim and Verrecchia, 1994). In this sense, our results support the hypotheses **H_{5c}** and **H_{7a}.**

Table 5.18 summarizes the results of the second group of hypotheses.

Table 5.18 – Summary of the results for the second group of hypotheses

Directors' and supervisors' structures	**Validation**
H_{4a}: There is a positive relation between directors' and supervisors' structures and voluntary disclosure.	Validated
H_{4b}: There is a positive relation between directors' and supervisors' structures and the level of organizational performance.	Validated
Ownership structure	
H_{5a}: There is a negative relation between ownership concentration and voluntary disclosure.	Not validated
H_{5b}: There is a negative relation between ownership concentration and the turnover ratio.	Validated
H_{5c}: There is a positive relation between ownership concentration and the bid-ask spread in the market.	Validated
H_{5d}: There is a positive relation between ownership concentration and organizational performance.	Not validated
Organizational performance	
H_{6a}: There is a positive relation between organizational performance and voluntary disclosure.	Validated
H_{6b}: There is a relation between organizational performance and the turnover ratio (no predicted sign)	Validated
Voluntary disclosure	
H_{7a}: There is a negative relation between voluntary disclosure of information and the bid-ask spread.	Validated
H_{7b}: There is a positive relation between voluntary disclosure of information and the turnover ratio.	Not validated

5.4.1.8 Decomposition of structural effects for the proxies of information asymmetry: direct, indirect and total effects

The final model allows us to do the decomposition of the structural effect that a particular latent variable (construct) has on others, in three categories: direct, indirect and total effects. The direct effect is quantified by the coefficient that determines the causal relationship between the two variables. Regarding indirect effects, they "*involve one or more intervening variables that transmit some of the causal effect of prior variables onto subsequent variables*" (Kline, 1998: 52). So, the total effect is nothing more than the sum of the direct and indirect effects that one variable exerts on another.

The quantification of indirect effects requires taking into consideration the different coefficients that express the causal relationships between the variables involved. By the analysis of the final path graphic we can see that there are two indirect effects on the information asymmetry proxies. The first indirect effect is between directors' and supervisors' structures and turnover ratio, through organizational performance, being the value calculated based on the effect that the latent variable ξ_1 (directors 'and supervisors structures') has on the latent variable η_2 (organizational performance) and the effect that the latter carries on the latent variable η_3 (turnover).

The calculation of the indirect effect will be: 0,337 * (-0,255) = -0,086

The second indirect effect is verified between directors' and supervisors' structures and bid-ask spread, through organizational performance and voluntary disclosure, being the

value calculated on the basis: (i) of the effect that the latent variable ξ_1 (directors' and supervisors structures) has on the latent variable η_1 (voluntary disclosure) and the latter effect that has on the latent variable η_4 (bid-ask); and (ii) of the effect that the latent variable ξ_1 (directors' and supervisors structures) has on the latent variable η_2 (organizational performance), which in turn has an effect on the latent variable η_1 (voluntary disclosure) and this last on the latent variable η_4 (bid-ask).

The calculation of the indirect effect will be: 0,456 * (-0,249) + 0,337 * 0,312 * (-0,249) = -0,140

In table 5.19 we show the standardized coefficients and the statistical significance of the direct and indirect effects on the information asymmetry proxies.

The indirect effect of directors' and supervisors' structures on turnover ratio, through organizational performance, is statistically significant at 0,05 level and presents a negative coefficient. This result is consistent with the previous analysis that effective directors' and supervisors' structures promote organizational performance, and shareholders tend to hold their shares for longer periods in companies with high profitability, which results in a lower turnover ratio. The indirect effect of directors' and supervisors' structures on bid-ask spread, through organizational performance and voluntary disclosure, is statistically significant at 0,05 level and presents a negative coefficient. This result is also consistent with the previous analysis that directors' and supervisors' structures increase directly, or indirectly through organizational performance, the voluntary disclosure that, in turn, will lead to the formation of more efficient prices in the market, resulting in a lower bid-ask spread.

Table 5.19 – Structural effect decomposition

	Effect on					
	Turnover			Bid-ask		
Effect origin	Direct	Indirect	**Total**	Direct	Indirect	**Total**
Director's and supervisors' structures	-----	**-0,086**	**-0,086**** (-2,203)	-----	**-0,140**	**-0,140**** (-2,379)
Ownership structure	**-0,481**	-----	**-0,481***** (-5,621)	**0,222**	-----	**0,222**** (2,429)
Org. Performance	**-0,255**	-----	**-0,255***** (-3,092)	**-----**	-----	-----
Voluntary disclosure	**-----**	-----	-----	**-0,249**	-----	**-0,249**** (-2,529)

*Significant at $0.05 < p \leq 0.10$; **Significant at $0.01 < p \leq 0.05$; ***Significant at $p \leq 0.01$
Test statistic below

5.4.2 Development of the proposed model using each category of voluntary disclosure separately

In this point we analyse the impact of the different categories of voluntary disclosure on information asymmetry, with the objective of understanding if the effect of providing information about strategy, for example, has a different impact on the level of information asymmetry than other kind of information category. We are going to use the same structural equation model, developed previously, by modifying the voluntary disclosure construct. In the previous analysis this construct contained six indicators, indicators that corresponded to the six categories of voluntary disclosure considered in our study. To be able to asses the impact of each category of disclosure in the information asymmetry, we constructed six models where, in each case, the construct "voluntary disclosure" will have only one indicator, in other words, a category of voluntary disclosure. In practice this construct will function as an observed variable.

Six models were estimated and re-specified after. As explained above, the re-specification of the six models will pass through the analysis of the statistical significance of the established relationships. If a given estimated parameter is not - under the statistical point of view - different from zero, for the levels of significance considered in the analysis, there are arguments in the literature to recommend its elimination. So, we made the re-specification of the models by withdrawing the non-significant relations. The standardized estimation of the final six structural models coefficients, their statistical significance and the goodness of fit tests are presented in table 5.20.

Table 5.20 - Standardized estimation of the final six structural models coefficients

Model using the strategy category of voluntary disclosure

	η1 **Voluntary disclosure** (strategy category)	η2 **Org performance**	η3 **Turnover**	η4 **Bid -ask**	Goodness of fit tests Final model	
ξ1 Director's and supervisors' structures	**0,415***** (4,415)	**0,336***** (3,103)				
ξ2 Ownership structure			**-0,481***** (-5,622)	**0,225**** (2,495)	(χ^2/df)	(126,502/84)=1,505
η1 Voluntary disclosure (strategy category)				**-0,253***** (-2,903)	**CFI**	0,941
η2 Org performance	**0,306***** (3,506)		**-0,256***** (-3,103)		**GFI**	0,876
					RMSEA	0,066
					TLI	0,924

Model using the market and competition category of voluntary disclosure

	η1 **Voluntary disclosure** (market and competition category)	η2 **Org performance**	η3 **Turnover**	η4 **Bid-ask**	Goodness of fit tests Final model	
ξ1 Director's and supervisors' structures	**0,222**** (2.037)	**0,333***** (3,089)				
ξ2 Ownership structure			**-0,48***** (-5,627)	**0,276***** (3,015)	(χ^2/df)	(136,707/85)=1,608
η1 Voluntary disclosure (market and competition category)					**CFI**	0,925
					GFI	0,869
					RMSEA	0,072
η2 Org performance	**0,192**** (1,964)		**-0,276***** (-3,382)		**TLI**	0,905

*Significant at 0.05< p ≤ 0.10 ; **Significant at 0.01< p ≤ 0.05; ***Significant at p ≤ 0.01
Test statistic below

Table 5.20 - Standardized estimation of the final six structural models coefficients (continuation)

Model using the marketing category of voluntary disclosure						
	η1 **Voluntary disclosure** (marketing category)	**η2** **Org performance**	**η3** **Turnover**	**η4** **Bid -ask**	Goodness of fit tests	Final model
ξ1 Director's and supervisors' structures	**0,457***** (4,302)	**0,346***** (3,210)				
ξ2 Ownership structure			**-0,481***** (-5,630)	**0,277***** (3,017)	(χ^2/df)	(128,454/86)=1,493
η1 Voluntary disclosure (marketing category)					**CFI**	0,939
η2 Org performance			**-0,278***** (-3,388)		**GFI**	0,878
					RMSEA	0,065
					TLI	0,923

Model using the human capital category of voluntary disclosure						
	η1 **Voluntary disclosure** (human capital category)	**η2** **Org performance**	**η3** **Turnover**	**η4** **Bid-ask**	Goodness of fit tests	Final model
ξ1 Director's and supervisors' structures	**0,347***** (3,213)	**0,331***** (3,082)				
ξ2 Ownership structure			**-0,479***** (-5,626)	**0,276***** (3,016)	(χ^2/df)	(126,711/85)=1,490
η1 Voluntary disclosure (human capital category)					**CFI**	0,940
η2 Org performance	**0,198**** (2,118)		**-0,276***** (-3,390)		**GFI**	0,875
					RMSEA	0,065
					TLI	0,923

*Significant at 0.05 < p ≤ 0.10 ; **Significant at 0.01 < p ≤ 0.05; ***Significant at p ≤ 0.01
Test statistic below

Table 5.20 - Standardized estimation of the final six structural models coefficients (continuation)

Model using the management and production category of voluntary disclosure						
	η1 **Voluntary disclosure** (management and production category)	**η2** **Org performance**	**η3** **Turnover**	**η4** **Bid- ask**	Goodness of fit tests	Final model
ξ 1 Director's and supervisors' structures	**0,366***** (3,405)	**0,330***** (3,050)				
ξ 2 Ownership structure			**-0,481***** (-5,635)	**0,277***** (3,017)	*(χ²/df)*	(126,486/85)=1,488
					CFI	0,940
η1 Voluntary disclosure (management and production category)					**GFI**	0,877
					RMSEA	0,065
η2 Org performance	**0,214**** (2,306)		**-0,277***** (-3,389)		**TLI**	0,924

Model using the future perspective category of voluntary disclosure						
	η1 **Voluntary disclosure** (future perspective category)	**η2** **Org performance**	**η3** **Turnover**	**η4** **Bid -ask**	Goodness of fit tests	Final model
ξ 1 Director's and supervisors' structures	**0,339***** (3,222)	**0,355***** (3,280)				
ξ 2 Ownership structure			**-0,459***** (-5,494)	**0,252***** (2,814)	*(χ²/df)*	(128,865/84)=1,534
					CFI	0,935
η1 Voluntary disclosure (future perspective category)			**0,193**** (2,454)	**-0,239***** (-2,737)	**GFI**	0,872
					RMSEA	0,068
η2 Org performance			**-0,311***** (-3,831)		**TLI**	0,917

*Significant at 0.05 < p ≤ 0.10 ; **Significant at 0.01 < p ≤ 0.05; ***Significant at p ≤ 0.01
Test statistic below

The most surprising result appears in the model that uses the category of future perspective, since there is a statistically significant relationship between this category of disclosure and the turnover ratio, a result not previously observed in the global model[53]. In addition, the models results show that it is the information on strategy and future perspective that most influence investors in their investment decision making. These are the two categories of voluntary disclosure that present the highest impact on the proxies of information asymmetry.

The results of the final model using the strategy category of voluntary disclosure are very similar to those found for the global model since, after the respecification, all the same relationships remained statistically significant. We should emphasize that the relationship between the disclosure of information about strategy and the bid-ask spread, as well as being negative and statistically significant, shows a slightly higher value for the standardized coefficient than the one found for the global model. This result reflects the degree of relevance and acceptance of the market to this kind of information. In relation to the turnover ratio, and in line with the results of the global model, there is no statistically significant relationship.

The results of the final model using the future perspective category of voluntary disclosure show the existence of statistically significant relationships, with the expected sign, among this category of disclosure and both proxies of information asymmetry. The positive relationship between this category of disclosure and the turnover ratio suggests that the

[53] We are going to call "global model" to the previous estimated SEM model that used the six categories of voluntary disclosure as indicators of the construct "voluntary disclosure".

investors' decisions to allocate shares of a company in portfolios with lesser or longer expecting holding periods is also sensible to this type of information.

The results of the remaining categories of voluntary disclosure (market and competition, management and production, marketing and human capital) show that these categories, when analysed individually, do not establish a statistically significant relationship with any of the proxies of information asymmetry, which suggests its minor relevance in the context of the information that investors use for making investment decisions.

The analysis of the models also allows us to check, in line with the global model, that the relationship between the construct "directors' and supervisors' structures" and the different categories of voluntary disclosure remain positive and statistically significant and that there is no statistically significant relation between the different categories of voluntary disclosure and the construct "ownership structure". It is also to be noted that, in some models, the relationship between organizational performance and the category of voluntary disclosure ceases to be strong enough, losing its statistical significance.

We also made the structural effect decomposition for each of the six models in the analysis. The standardized coefficients and the statistical significance of the direct and indirect effects on the information asymmetry proxies are presented in table 5.21. With this analysis we can verify the statistical significance of the indirect effects between the construct "directors' and supervisors' structures" and the proxies of information asymmetry.

Table 5.21 – Structural Effect decomposition of the six final models

	Strategy category						Market and competition category						Management and production category					
	Effect on						**Effect on**						**Effect on**					
	Turnover			**Bid-ask**			**Turnover**			**Bid-ask**			**Turnover**			**Bid-ask**		
Effect origin	Direct	Indirect	**Total**	Direct	Indirect	**Total**	Direct	Indirect	**Total**	Direct	Indirect	**Total**	Direct	Indirect	**Total**	Direct	Indirect	**Total**
Director's and supervisors' structures	-----	**-0,086**	**-0,086**** (-2,210)	-----	**-0,131**	**-0,131**** (-2,490)	-----	**-0,092**	**-0,092**** (-2,289)	-----	-----	-----	-----	**-0,092**	**-0,092**** (-2,276)	-----	-----	-----
Ownership structure	**-0,481**	-----	**-0,481***** (-5,622)	**0,225**	-----	**0,225**** (2,495)	**-0,480**	-----	**-0,480***** (-5,627)	**0,276**	-----	**0,276***** (3,015)	**-0,481**	-----	**-0,481***** (-5,635)	**0,277**	-----	**0,277***** (3,017)
Org. Performance	**-0,256**	-----	**-0,256***** (-3,103)	**-----**	-----	-----	**-0,276**	-----	**-0,276***** (-3,382)	**-----**	-----	-----	**-0,277**	-----	**-0,277***** (-3,389)	**-----**	-----	-----
Category of voluntary disclosure	**-----**	-----	-----	**-0,253**	-----	**-0,253***** (-2,903)	**-----**	-----	-----	-----	-----	-----	**-----**	-----	-----	-----	-----	-----

*Significant at $0.05 < p \leq 0.10$; **Significant at $0.01 < p \leq 0.05$; ***Significant at $p \leq 0.01$

Test statistic below

Table 5.21 – Structural Effect decomposition of the six final models (continuation)

	Future perspective category						Marketing category						Human capital category					
	Effect on						**Effect on**						**Effect on**					
	Turnover			**Bid-ask**			**Turnover**			**Bid-ask**			**Turnover**			**Bid-ask**		
Effect origin	Direct	Indirect	**Total**	Direct	Indirect	**Total**	Direct	Indirect	**Total**	Direct	Indirect	**Total**	Direct	Indirect	**Total**	Direct	Indirect	**Total**
Director's and supervisors' structures	-----	**-0,045**	**-0,045** (-0,859)	-----	**-0,081**	**-0,081**** (-2,087)	-----	**-0,096**	**-0,096**** (-2,340)	-----	-----	-----	-----	**-0,092**	**-0,092**** (-2,228)	-----	-----	-----
Ownership structure	**-0,459**	-----	**-0,459***** (-5,494)	**0,252**	-----	**0,252***** (2,814)	**-0,481**	-----	**-0,481***** (-5,630)	**0,277**	-----	**0,277***** (3,017)	**-0,479**	-----	**-0,479***** (-5,626)	**0,276**	-----	**0,276***** (3,016)
Org. Performance	**-0,311**	-----	**-0,311***** (-3,831)	**-----**	-----	-----	**-0,278**	-----	**-0,278***** (-3,388)	**-----**	-----	-----	**-0,276**	-----	**-0,276***** (-3,390)	**-----**	-----	-----
Category of voluntary disclosure	**0,193**	-----	**0,193**** (2,454)	**-0,239**	-----	**-0,239***** (-2,737)	**-----**	-----	-----	-----	-----	-----	**-----**	-----	-----	-----	-----	-----

*Significant at $0.05 < p \leq 0.10$; **Significant at $0.01 < p \leq 0.05$; ***Significant at $p \leq 0.01$

Test statistic below

In the categories of management and production, market and competition, marketing and human capital the indirect effect of the construct "directors' and supervisors' structures" on bid-ask spread it is not verified, due to the fact that there were no relationships between these categories of disclosure and this proxy of information asymmetry. Otherwise, in the model using the strategy category, the negative indirect effect of directors' and supervisors' structures on bid-ask spread maintains itself, through organizational performance and through this category of voluntary disclosure. When using the future perspective category, this indirect effect takes on a lesser amplitude because there was no statistically significant relationship between the organizational performance and this category of voluntary disclosure. In this sense, we only have an indirect effect of the construct "directors' and supervisors' structures" on bid-ask spread for the models using the strategy or the future perspective category.

The indirect effect of the construct "directors' and supervisors' structures" on turnover ratio, through organizational performance and through the future perspective category, is negative but loses its statistical significance due to the strong positive direct relation between the future perspective category of disclosure and this proxy of information asymmetry. Otherwise, the negative indirect effect of the construct "directors' and supervisors' structures" on turnover ratio, only through organizational performance, is statistically significant for all the remaining categories of voluntary disclosure.

In sum, the estimation of the six structural equation models, using individually each one of the categories considered in the construct of the voluntary disclosure index, allows us to pursue two main analyses. Firstly, when we analyse the models using each category of

voluntary disclosure separately we see that some relationships are no longer statistically significant, when compared to the results obtained with the estimation of the global model This can suggest that, in general, one type of information can be insufficient in itself. Only when the information is combined can provide useful information for investors. Secondly, we found that the disclosure of informations about the company's strategy and future perspective are more useful than other types of information as tools that companies possess to communicate and to influence the market. Our results showed that these categories of voluntary disclosure exert a significant influence on information asymmetry. Still, others cease to have any relevant action when their effects are analysed individually.

5.5 Conclusion

This chapter presented and discussed the results of univariate and multivariate data analysis.

We presented and discussed the results of the univariate and multivariate data analysis. We started with the analysis of the results from Pearson's and Spearman's correlations. After that we applied the technique of multiple regression to test the first group of research hypotheses about the corporate governance determinants of voluntary disclosure. We used, firstly, the total voluntary disclosure index as the dependent variable and, secondly, we made the same analysis using the six categories of the voluntary disclosure. We presented and discussed the results for the developed hypotheses.

To test the second group of hypotheses we used a structural equation model. We intended to study the direct and indirect relation between the governance rules and information asymmetry, through the voluntary disclosure of information and organizational performance. In this point we described the steps for the development of the proposed model. Following this, we presented and discussed the results from the second group of research hypotheses and analysed the decomposition of structural effects for the proxies of information asymmetry. Finally, we analysed the impact of the different categories of voluntary disclosure on information asymmetry. We used the same structural equation model by modifying the voluntary disclosure construct.

The following chapter summarizes the main conclusions and contributions of this study, as well as their limitations. We also present some suggestions for future investigations.

Chapter 6 - Conclusions

With this research we intend to contribute to the study of the impact of corporate governance rules in the disclosure of information and hence in the reduction of information asymmetries, in the specific case and reality of the countries of the Iberian Peninsula. In the following points we expose the main conclusions, contributions and limitations of this research, and present some suggestions for future investigation.

- Main Conclusions

We empirically examined the corporate governance determinants of voluntary disclosure, for Iberian Peninsula non-financial listed companies, and its effects on the information asymmetry. In our study we proceeded to the test of two groups of hypotheses. The first group of hypotheses presented studied the corporate governance determinants of voluntary corporate disclosure, using the multiple regression methodology. The second group of hypotheses was tested using the methodology of structural equation models. We studied the direct and indirect relations between governance rules and information asymmetry, through the voluntary disclosure of information and the organizational performance.

We wanted to understand how the corporate governance rules affect the level of information asymmetry in the capital market, directly and indirectly. For that we divided the governance rules in two major constructs: the ownership structure and the directors' and supervisors' structures. We hypothesized that directors' and supervisors' structures can

influence the organizational performance and the information disclosed by firms and this, in turn, would affect the level of information asymmetry between management and shareholders. In relation to ownership structure, it was expected to exert an indirect influence on the level of information asymmetry, but a direct influence was also expected.

We built a voluntary disclosure index based on the information firms provided in their annual reports to shareholders. The index was based on six categories: strategy, market and competition, management and production, marketing, future perspective and human capital. The results show that the score for strategy is significantly higher than for marketing and human capital. The score for strategy is the highest score, suggesting that management find information about strategy the most important disclosure category. Marketing is the category that presented the lowest score. The total voluntary disclosure index presented a mean of 47%.

By the analysis of the correlation matrix we saw that the total voluntary disclosure index showed significant correlations with most of the variables that characterize the directors' and supervisors' structures. We also saw that ownership concentration is negatively correlated with the adoption of practices of good governance, suggesting that firms with concentrated capital do not reach the same levels of compliance with recommendations of good governance compared with companies with dispersed capital. In this sense, information asymmetry is expected to be higher in a setting with a high ownership concentration.

In line with previous disclosure studies, the analysis of the multiple regression models indicated that disclosure decisions are a complex process affected by a number of interrelated factors. The results indicate that the main determinants of voluntary disclosure are the variables related with firm size, growth opportunities, organizational performance, board compensation and the presence of a large shareholder.

The extent of the result showed that the firm size can be considered a major determinant of voluntary disclosure. The firm size presented a positive statistical significant relation with all the categories of voluntary disclosure. These results confirm that firm size is significantly related to the level of information voluntarily disclosed by non-financial Iberian Peninsula listed companies. Also the agency theory suggests that larger firms will have higher agency costs compared to smaller firms which require them to voluntarily disclose more information to mitigate this agency problem (Jensen and Meckling, 1976). This variable has been found to be significantly and positively correlated with disclosure level in a number of studies, suggesting that larger companies disclose more information, either mandatory or voluntary, than smaller companies (Cooke 1989a, b; Meek *et al*., 1995; Hossain *et al*. 1995, Camfferman and Cooke, 2002; Eng and Mak, 2003; Allegrini and Greco, 2011). Large firms are likely to make more voluntary disclosures because of the greater demand for outside capital, lower average costs of collecting and disseminating information, and greater demand for information by financial analysts (Hossain *et al.*, 1995).

The positive relation between organizational performance and the voluntary disclosure index corroborate the arguments of Singhvi and Desai (1971), Meek *et al. (*1995) and

Petersen and Plenborg (2006). Profit and return have been recognized in the literature as relevant explanatory variables for the disclosure level. When the rate of return is high, managers are motivated to disclose detailed information in order to support the continuance of their positions and remuneration. We also found a positive relation between growth opportunities and the voluntary disclosure of the Iberian Peninsula companies. A higher provision disclosure level should also be associated with a better market expectation for the firm's future growth. These results are also consistence with the legitimacy theory. Companies with good performance feel persuaded by the social contract to perform voluntary reporting of their activities and results. According to the signalling theory, managers of companies that are performing well disclose more information about their present situation, in order to send signs to the market about the quality of the companies they manage.

We found a negative association between the level of voluntary disclosure and the presence of a large shareholder in Iberian Peninsula non-financial listed companies. Like stated previously, the Spanish and Portuguese institutional setting has in common a high level of concentration in corporate shareholdings. Our results show that this characteristic of the Iberian Peninsula ownership structure have a significant impact on the adoption of rules of good governance which, in turn, affect the corporate disclosure. Large shareholder ownership may be accompanied by the owner's considerable participation in the firm's management, which may lead to unlimited access to information. Under these circumstances, the demand for information would be very low, or even absent, particularly if the manager owns all the firm's shares (Raffournier, 1995). As suggested by Wymeersch

(2002) compliance with the recommendations of codes of good governance is more difficult when a significant proportion of a firm's equity is held by a majority shareholder.

In relation to the influence of directors' and supervisors' structures in voluntary disclosure, we saw that the variable related with board compensation is the one that present the most significant impact on the disclosure practices. Our result suggests that management incentives could mitigate the agency problem and enhance alignment of managers' interests with those of shareholders. The linkage of management compensation to performance results in a transfer of risk to management and acts as an impeditive of their opportunistic behaviour. In this way, we confirm the results obtained in other studies (*e.g.* Arcay and Vázquez, 2005; Lim *et al*. 2007). A consistent result was also produced by a study which examined the association between disclosure activities of managers and stock-based incentives of United States companies (Nagar *et al*. 2003).

We plotted several multiple regressions using as the dependent variable each one of the six categories of the voluntary disclosure index and concluded that we have less statistical significant determinants for each voluntary disclosure category than the ones resulting from the previous analysis of the total voluntary disclosure score. Despite this, in general, we have the same major corporate governance determinants. An interesting result was the positive statistical significant relation between the board compensation and the disclosure of information on marketing category and human capital category. This result can suggest that board compensation, especially stock price-based incentives, induce managers to provide additional information on intangibles, on a voluntary basis, with the purpose of boosting the market stock price of their companies.

To extend the regression model results we applied the technique of structural equation modelling, path analysis, to test simultaneously for existing relationships among the variables included in our study. We divided the governance rules in two constructs, one for the directors' and supervisors' structures and another for the ownership structure. In the last one we included mainly variables related with ownership concentration. The results showed that the appointment of independent and non-executive directors, the dimension of the board, the management incentives and expertise, and the formation of supervising structures, as indicators of the directors' and supervisors' structures construct, are positively related to the provision of voluntary information and follow the literature that relate corporate governance characteristics to organizational performance (Baysinger and Butler, 1985; Dehaene *et al.*, 2001; Kanagaretnam *et al*., 2007).

The turnover ratio was negatively related with the ownership structure construct which suggests that a bigger ownership concentration lead to less stock transactions. The negative relation with organizational performance suggests that stocks of firms with higher returns are allocated in portfolios with longer expected holding periods. The positive relation between bid-ask spread and the ownership structure construct suggests that bigger ownership concentration lead to the formation of inefficient prices in the market. On the other hand, the negative relation between the bid-ask spread and voluntary disclosure follows the argument that voluntary disclosure leads to more efficient prices and tends to reduce information asymmetry in the market. These results follow those obtained in previous research (*e.g.* Amihud and Mendelson, 1986; Petersen and Plenborg, 2006; Espinosa *et al*., 2008).

It was possible to analyse the indirect effects between constructs by using the structural equation model. We found two statistically significant indirect effects. We found a negative indirect effect of directors' and supervisors' structures on turnover ratio, through organizational performance. This result is consistent with the previous analysis that effective directors' and supervisors' structures increase organizational performance, and shareholders tend to hold their shares for longer periods in companies with high profitability. We also found a negative indirect effect of directors' and supervisors' structures on bid-ask spread, through organizational performance and voluntary disclosure. This result is consistent with the previous analysis that directors' and supervisors' structures increase directly, or indirectly through organizational performance, the voluntary disclosure that, in turn, will lead to the formation of more efficient prices in the market.

In this sense, our results follow the argument that for firms with high levels of disclosure the bid-ask spread is lower. In this case, investors can be relatively confident that their stock transaction occurs near to a "*fair price*" (Diamond and Verrecchia, 1991; Kim and Verrecchia, 1994). However, in firms with a high ownership concentration investors tend to increase the bid-ask spreads and trade less, which, in this case, reduces the liquidity of the stock. These results are consistent with those obtained in previous research (Bolton and Von Thadden, 1998; Heflin and Shaw, 2000; Petersen and Plenborg, 2006; or more recently Jiang *et al*., 2011). Otherwise, our results support the adverse selection hypothesis and demonstrate that voluntary disclosure attenuate information asymmetry associated with ownership concentration.

We also examined the impact of the different categories of voluntary disclosure on information asymmetry. When we analysed the estimation of the six structural equation models, using each category of voluntary disclosure separately, we saw that some relationships were no longer statistically significant, when compared to the results obtained with the estimation of the previous global model. The models results suggest that each category of information can be insufficient in itself. Generally when the information is combined it provides more useful information to form the investors' expectation about the future performance and risk of the company. The characteristics of the companies and their decisions concerning the disclosure policy have influence on the information that is disclosed to all users. However, we can also verify that some categories of voluntary disclosure exert a significant influence on information asymmetry, particularly in the case of disclosure of information about the company's strategy and future perspective. Still, others cease to have any relevant action when their effect is analysed individually.

In this sense, the models results show that it is the information on strategy and future perspective that most influence investors in their investment decision making. These are the two categories of voluntary disclosure that present the highest impact on the proxies of information asymmetry. In this sense, this information can be distinguished by its capacity to differentiate the companies that act on the market and have an obvious decision relevance to investors.

-Contributions of the study

The previous research about the subject of corporate governance was predominantly based on studies done with countries belonging to the Anglo-Saxon sphere using as a base their

financial markets. These financial markets are generally efficient and with significant levels of transparency. The existing literature on the relationship between the disclosure of information and good practices of corporate governance shows the existence of a positive relationship, favouring the reduction of information asymmetries in the market. Thus, the presence of "*good governance*" is traditionally associated with high levels of transparency, benefiting market efficiency. However, more studies on other realities should be improved. This work analysed the association between governance rules and information asymmetry, in a set of corporate voluntary disclosure, using Iberian Peninsula non-financial listed companies. By using the methodology of structural equation modelling, we were able to analyse the direct and indirect relations among the variables under study. Furthermore, we analysed the impact of the different voluntary information categories on the information asymmetry proxies. It was possible to conclude which categories of voluntary disclosure exert a significant influence on information asymmetry. The results should draw companies' attention to the possibilities that exist to improve communication with the market.

Most of previous research has examined the impact of public disclosure on information asymmetry and market liquidity around well defined information events, such as earnings announcements. This study intended to extend the previous research by analysing the relation between corporate governance rules, firm's disclosure practices and information asymmetry proxies, not conditioned by the occurrence of an information release. Furthermore, most of the previous research studied the effect of one single corporate governance attribute. In this study we examined, simultaneously, several corporate governance mechanisms, assuming that the different mechanisms interact with each other.

Unlike the homogeneous United States capital market, the European market is heterogeneous in terms of capital market culture and development, legal framework and corporate governance standards. The most important difference lies in the composition of the shareholder structure (Dardas and Güttler, 2011). Most publicly traded companies in the United States and the United Kingdom tend to be widely-held, whereas the ownership structure of most continental European companies presents a large and dominant shareholder, who exerts considerable control (Faccio and Lang, 2002). The literature recognizes that the ownership structure provides fundamental explanation for governance issues, including corporate disclosures policies. Ownership concentration is acknowledged as a central concept in the theory of corporate governance (Shleifer and Vishny, 1997).

Spain and Portugal have in common a high level of concentration in corporate shareholdings. Our results demonstrate that this characteristic of the Iberian Peninsula ownership structure have a significant impact on the adoption of rules of good governance which, in turn, affect the corporate disclosure. The results in our study are consistent with the agency theory explanation of the complementary relationship between governance rules and voluntary disclosure, in a setting featured by large controlling shareholders.

The results obtained with the use of the proposed models for non-financial listed companies of Iberian Peninsula, corroborate some of the main theoretical foundations so far available concerning the relationship between corporate governance and voluntary disclosure, as well as the relationship between voluntary disclosure and information asymmetry. In addition, the results from the structural equation model allowed us to understand how the governance rules exert influence on the proxies of information

asymmetry in the market. We concluded that the ownership structure exerts a direct influence on information asymmetry and that directors' and supervisors' structures exert an indirect influence, through the organizational performance and the voluntary disclosure of information.

The failure to find the relationship between the total voluntary disclosure index and the turnover ratio shows that stock liquidity is more related to the greater or lesser ownership concentration and with the performance of companies than with the access to information. Moreover, it is clear that the role that information disclosure plays in these markets is mainly at the level of price formation. These results provide additional insight into the determinants of stock liquidity for the companies under study.

We analysed the information disclosed by Iberian Peninsula non-financial listed companies, concerning the year of 2007. In this sense, we analysed the information disclosed after the obligation of following International Financial Reporting Standards (IFRS). Furthermore, in Spain, the Unified Good Governance Code, applicable from 2007 onwards, provided a common standard for the good governance practices of all listed firms. In Portugal, the recommendations on Corporate Governance were implemented on a comply-or-explain basis in 2001, continuing to be regularly improved through a process of bi-annual amendments. We hope that this research and the results obtained have contributed to the perception of the practices of governance and disclosure adopted by Iberian Peninsula listed companies. The results of this study should be of interest of corporate reporting regulators to better understand the factors that explain voluntary disclosure, to assist them in the formulation of corporate reporting standards and

recommendations, and in their actions aimed at improving transparency in publicly traded companies. Furthermore, the results of this study may also be useful to investors, company managers and other researchers interested in the information disclosed by companies to the market and their determining factors.

In conclusion, our results show that good corporate governance contributes to the improvement of a more equitable and transparent security market, and should reinforce investor confidence in the financial markets. The disclosure policy is an important mechanism to mitigate agency conflicts and information asymmetry between large insider shareholders and minority outsider shareholders. Our results are consistent with the calls for more disclosure requirements in an agency setting and highlight the importance of corporate disclosures under concentrated ownership structures in order to reduce information asymmetry. Furthermore, our results also provide evidences on how the different categories of voluntary disclosure are related to information asymmetry and are of interest to regulators and companies who wish to use disclosure policy to reduce the level of information asymmetry in the market.

-Limitations and future research

Our study has some limitations that suggest a need for future work.

The existing literature showed that measuring firm's disclosure activities is difficult and that commonly used proxies exhibit numerous problems (Beyer *et al.,* 2010). One limitation that can be pointed out is our self constructed measure of voluntary disclosure.

Our voluntary disclosure index was based on the information provided by the firms in their annual reports or in public websites. As a result any disclosure those firms provided in analysts meetings, conference calls and in other circumstances are not included in the final result of our index.

We focused on the extent of voluntary disclosure. However, such disclosures do not mean that they are credible or reflecting the true state of the company. Therefore, further research is needed to provide evidence on the determinants of high quality disclosure. Other limitations are related with the selection of the items in the disclosure index, the content analysis and the researcher inevitable subjective assessment. Furthermore, according to Beattie *et al.* (2004), studies that have specified a broad-based set of information items *ex ante*, have the limitation of ignore any disclosures that fall outside that list.

We have examined the extent of voluntary disclosure cross-sectionally using one year, considering that companies operating in continuity and that, in general, they don't dramatically change their disclosure policies from year to year (Botosan, 1997). This was also justified based on a lengthy analysis of variables related to voluntary disclosure of information, which involved reading and classifying the information contained in voluntary reporting of annual accounts and the official websites of the companies. Future researches may perform a longitudinal analysis to assess how disclosure changes over time. Another limitation has to do with the size of the sample used. It would be beneficial to have a sample of greater dimension to be able to generalize more confidently on the results obtained.

We have just analysed the information disclosed by non-financial listed companies, the biggest ones, operating in Portugal and Spain. But Portuguese and Spanish companies are mostly composed of small and medium-sized companies and, in this sense, we cannot extrapolate results obtained in our study to other companies' realities. Furthermore, the companies included in the samples are the ones subject to a greater examination and pressure by the market to disclose relevant information in their annual reports. In addition we found that size is the most significant variable in explaining the extent of voluntary disclosure in Iberian Peninsula non-financial listed companies.

We analysed the corporate governance determinants of voluntary disclosure and we are conscious of the existence of other variables that can have influence and that were not included in the proposed models. Despite this, we are conscious of the impossibility of inclusion of all variables that potentially influence the level of voluntary disclosure of Iberian Peninsula non-financial listed companies.

Despite all the limitations mentioned, the results of this study should contribute for a more extensive future research.

The objective of corporate reports is to supply information to a number of user groups to enable them to make decisions about the allocation of scarce resources (Cooke, 1989b). With our work we seek to understand the specific aspects related with the voluntary disclosure of information by firms, but the corporate information environment is wider. In this sense, and for future work, it would be interesting to explore the interactions among

the several information sources, namely the relations between firm's voluntary disclosure policies, mandatory disclosure requirements and the information produced by analysts.

Furthermore, the published research on the extent of voluntary disclosure focused on listed companies and it is clearly insufficient in relation to unlisted companies. Therefore, future research on the extent of voluntary disclosure, by unlisted Iberian Peninsula companies, represents a contribution to knowledge and could help to improve a minimum level of acceptable disclosure.

Moreover, many disclosure studies, including the present one, tend to focus on the benefits of the increased disclosures, namely in capital markets. Future research should consider the costs of providing additional disclosure such as loss of competitiveness and increased reporting expenses. To FASB (2001b) it is important to consider whether voluntary disclosures about the company's forward-looking strategies, would adversely affect the company's competitive position and whether the risk of adversely affecting competitive position exceeds the expected benefit of making the voluntary disclosure. Following Beyer *et al.* (2010) the costs and benefits of voluntary disclosures may not be independent.

In relation to the determinants of voluntary disclosure, there are many other variables that could influence the disclosure practices of companies. It is important to analyse, in future works, the relation of other variables used in other studies, such as the company being listed in foreign exchanges (*e.g*. Cooke, 1989a, b; Lopes and Rodrigues, 2007; Wang *et al.*, 2008) or the multinationality (*e.g.* Lopes and Rodrigues, 2007; Monteiro and Aibar-Guzmán, 2010). According to Cooke (1989b) if the extent of voluntary disclosure by

multiple listed companies is generally higher than other companies the regulatory authorities might wish to analyse why and, if foreign regulation is an important factor, it might decide to internalise such disclosures. To Lopes and Rodrigues (2007) the more internationalised a company is the more it has to show its stakeholders (customers, suppliers, government) that it is a good company. Even a company that is not listed internationally may have an interest in showing good levels of disclosure if it has international operations.

Furthermore, future research should investigate other variables which might influence the relation between corporate governance, disclosure policy and information asymmetry, using alternative proxies for information asymmetry. Future research could also analyse the relation between governance rules, disclosure changes and information asymmetry in different disclosure regulatory environments, through longitudinal studies and international comparisons.

With the above suggestions we pretend to contribute to the expansion of this area of research.

Finally, we hope that this research has contributed to draw conclusions on the voluntary disclosure practices, adopted by Iberian Peninsula non-financial listed companies, the corporate governance determinants of these practices and their impact on information asymmetry in the market.

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Appendixes

Appendix 1

List of companies

Order Number	Name of the company	Country
1	Altri, SGPS, S.A.	Portugal
2	Brisa, Auto Estradas de Portugal, S.A.	Portugal
3	Cimpor, Cimentos de Portugal, SGPS, S.A.	Portugal
4	Comp. Industrial Resinas Sintéticas - Cires, S.A.	Portugal
5	Cofina, SGPS, S.A.	Portugal
6	Compta, Equipamentos e Serviços de Informática, S.A.	Portugal
7	Corticeira Amorim, SGPS, S.A.	Portugal
8	EDP, Energias de Portugal, S.A.	Portugal
9	Estoril Sol, SGPS, S.A.	Portugal
10	Fisipe, Fibras Sintéticas de Portugal, S.A.	Portugal
11	Galp Energia, SGPS, S.A.	Portugal
12	Glintt, Global Intelligent Technologies, SGPS, S.A.	Portugal
13	Ibersol, SGPS, S.A.	Portugal
14	Imobiliária Construtora Grão Pará, S.A.	Portugal
15	Impresa, SGPS, S.A.	Portugal
16	Inapa, Investimentos, Participações e Gestão, S.A.	Portugal
17	Jerónimo Martins, SGPS, S.A.	Portugal
18	Lisgráfica, Impressão e Artes Gráficas, S.A.	Portugal
19	Martifer, SGPS, S.A.	Portugal
20	Grupo Media Capital, SGPS, S.A.	Portugal
21	Mota-Engil Engenharia e Construção, S.A.	Portugal
22	Novabase, SGPS, S.A.	Portugal
23	Sociedade Comercial Orey Antunes, S.A.	Portugal
24	Papelaria Fernandes, Indústria e Comércio, S.A.	Portugal
25	Portucel, Emp. Celulose e Papel Portugal, SGPS, S.A.	Portugal
26	Portugal Telecom, SGPS, S.A.	Portugal
27	Reditus, SGPS, S.A.	Portugal
28	REN, Redes Energéticas Nacionais, SGPS, S.A.	Portugal
29	SAG Gest, Soluções Automóvel Globais, SGPS, S.A.	Portugal
30	Semapa, Sociedade Investimento e Gestão, SGPS, S.A.	Portugal
31	Grupo Soares da Costa, SGPS, S.A.	Portugal
32	Sonaecom, SGPS, S.A.	Portugal
33	Sonae Indústria, SGPS, S.A.	Portugal
34	Sonae, SGPS, S.A.	Portugal
35	Sumolis, S.A.	Portugal
36	Teixeira Duarte, Engenharia e Construções, S.A.	Portugal
37	Zon Multimedia, Serviços de Telecomunicações e Multimédia, SGPS, S.A.	Portugal
38	Toyota Caetano Portugal, S.A.	Portugal
39	Abengoa, S.A.	Spain
40	Abertis Infraestructuras, S.A.	Spain
41	Acciona, S.A.	Spain
42	Acerinox, S.A.	Spain
43	ACS, Actividades de Construccion y Servicios, S.A.	Spain

44	Afirma Grupo Inmobiliário, S.A.	Spain
45	Adolfo Dominguez, S.A.	Spain
46	Amper, S.A.	Spain
47	Anten 3 de Television, S.A.	Spain
48	Avanzit, S.A.	Spain
49	Sociedad General de Aguas de Barcelona, S.A.	Spain
50	Azkoyen, S.A.	Spain
51	Baron de Ley, S.A.	Spain
52	Befesa Medio Ambiente, S.A.	Spain
53	Bodegas Riojanas, S.A	Spain
54	Campofrio Food Group, S.A.	Spain
55	Cementos Portland Valderrivas, S.A.	Spain
56	Compañia Vinicola del Norte de España, S.A.	Spain
57	Cie Automotive, S.A.	Spain
58	Cintra Concesiones de Infrastructuras de Transporte, S.A.	Spain
59	Clínica Baviera, S.A.	Spain
60	Codere, S.A.	Spain
61	Construcciones y Auxiliar de Ferrocarriles, S.A	Spain
62	Corporacion Dermoestetica, S.A.	Spain
63	Dogi Internacional Fabrics, S.A.	Spain
64	Duro Felguera, S.A.	Spain
65	Ebro Puleva, S.A	Spain
66	Elecnor, S.A.	Spain
67	Enagas, S.A.	Spain
68	Endesa, S.A.	Spain
69	Ercros, S.A.	Spain
70	Exide Techonologies, S.A.	Spain
71	Faes Farma, S.A.	Spain
72	Federico Paternina, S.A.	Spain
73	Fersa Energias Renovables, S.A.	Spain
74	Fluidram, S.A.	Spain
75	Fomento de Construcciones y Contratas, S.A.	Spain
76	Funespaña, S.A.	Spain
77	Gamesa Corporation Tecnologica, S.A.	Spain
78	Gas Natural SDG, S.A.	Spain
79	Grifols, S.A.	Spain
80	Grupo Empresarial Ence, S.A.	Spain
81	General de aquiler maquinaria	Spain
82	Grupo Ferrovial, S.A.	Spain
83	Inditex, Industria de Diseño Textil, S.A.	Spain
84	Inbesos, S.A.	Spain
85	Iberdrola, S.A.	Spain
86	Iberia, S.A	Spain
87	Indo International, S.A.	Spain
88	Iberpapel Gestion, S.A.	Spain
89	Indra Sistemas, S.A.	Spain
90	Inypsa,S.A.	Spain
91	Imobiliaria Colonial, S.A.	Spain
92	Itinere Infraestructuras, S.A.	Spain
93	Jazztel, S.A.	Spain
94	Laboratorio Almirall, S.A.	Spain
95	Lingotes Especiales, S.A	Spain

96	Metrovacesa, S.A	Spain
97	Mecalux, S.A.	Spain
98	Miquel y Costas, S.A.	Spain
99	Montebalito, S.A.	Spain
100	Natra, S.A	Spain
101	Natraceutical, S.A.	Spain
102	NH Hoteles, S.A.	Spain
103	Nicolas Correa, S.A	Spain
104	Obrascon Huarte Lain, S.A.	Spain
105	Petroleos Companhia Española, S.A. (Cepsa)	Spain
106	Parquesol, Inmobiliaria y Proyectos, S.A.	Spain
107	Papeles y Cartones, S.A	Spain
108	Pescanova, S.A	Spain
109	Prisa, Promotora de Informaciones, S.A.	Spain
110	Prosegur, Compañia de Seguridad, S.A.	Spain
111	Puleva Biotech, S.A	Spain
112	Renta Corporation Real Estate, S.A.	Spain
113	Red Electrica de España, S.A	Spain
114	Repsol YPF, S.A.	Spain
115	Sacyr Vallehermoso, S.A.	Spain
116	Seda de Barcelona, S.A	Spain
117	Service Point Solutions, S.A.	Spain
118	Sniace, S.A.	Spain
119	Sol Melia, S.A.	Spain
120	Solaria Energia y Medioambiente, S.A.	Spain
121	Sotogrande, S.A.	Spain
122	SOS Corporation Alimentaria, S.A.	Spain
123	Testa, Inmuebles en Renta, S.A.	Spain
124	Telecinco, Gestivision, S.A.	Spain
125	Tavex, S.A.	Spain
126	Tecnicas Reunidas, S.A.	Spain
127	Tecnocom, Telecomunicaciones y Energia, S.A.	Spain
128	Telefonica, S.A.	Spain
129	Tubacex, S.A.	Spain
130	Tubos Reunidos, S.A.	Spain
131	Union Fenosa, S.A	Spain
132	Urbas Guadahermosa, S.A.	Spain
133	Unipapel, S.A	Spain
134	Uralita, S.A	Spain
135	Vidrala, S.A	Spain
136	Viscofan, S.A.	Spain
137	Vocento, S.A.	Spain
138	Vueling Arlines, S.A.	Spain
139	Zardoya Otis, S.A.	Spain
140	Zeltia, S.A.	Spain

Appendix 2

SEM estimation methods

ML (Maximum likelihood estimation)	ML is by far the most common method. Unless the researcher has good reason, this default should be taken even if other methods are offered by the modelling software. ML makes estimates based on maximizing the probability (likelihood) that the observed co-variance are drawn from a population assumed to be the same as that reflected in the coefficient estimates. Key assumption of ML estimation is indicator variables with multivariate normal distribution.
GLS (Generalized least squares)	GLS is an adaptation of OLS to minimize the sum of the differences between observed and predicted covariance rather than between estimates and scores. It is probably the second-most common estimation method after ML. Olsson *et al.* (2000) compared ML and GLS under different model conditions, including non-normality, and found that ML estimation, under conditions of misspecification, provided more realistic indices of overall fit and less biased parameter values for paths that overlap with the true model than did GLS. GLS works well even for non-normal data when samples are large (n>250).
OLS (Ordinary least squares)	OLS makes estimates based on minimizing the sum of squared deviations of the linear estimates from the observed scores. However, even for path modelling of one-indicator variables, ML is still preferred in SEM because ML estimation estimates are computed simultaneously for the model as a whole, whereas OLS estimates are computed separately in relation to each endogenous variable. OLS assumes similar underlying distributions but not multivariate normality, as does ML, but ADF (see below) is even less restrictive and is a better choice when ML's multivariate normality assumption is severely violated.
ULS (Unweighted least squares)	ULS also focuses on the difference between observed and predicted co-variances, but does not adjust for differences in the metric (scale) used to measure different variables, whereas GLS is scale-invariant, and is usually preferred for this reason. Also, ULS does not assume multivariate normality as does ML. However ULS is rarely used, perhaps in part because it does not generate model chi-square values.
ADF (Asymptotically distribution-free)	ADF estimation does not assume multivariate normality (whereas ML, GLS, and ULS do). For this reason it may be preferred where the researcher has reason to believe that ML's multivariate normality assumption has been violated. ADF estimation starts with raw data, not just the correlation and covariance matrices. ADF is even more computer-intensive than ML and is accurate only with very large samples (200-500, even for simple models).
WLS (Weighted least squares)	WLS requires very large sample sizes for dependable results. Olsson *et al.* (2000) compared WLS with ML and GLS under different model conditions and found that contrary to texts which recommend WLS when data are non-normal, in simulated runs under non-normality, WLS was never better than ML and GLS even for non-normal data. The authors concluded that for wrongly specified models, WLS tended to give unreliable estimates and over-optimistic fit values.

Adapted from Garson (2009)

Appendix 3

Goodness-of-fit Measures

Measures	Description	Acceptance level
Measures of absolute Fit		
Likelihood-Ratio Chi-Square Statistic (χ^2)	A large value of chi-square relative to the degrees of freedom signifies that the observed and estimated matrices differ considerably. Low chi-square values, which result in significance levels greater than 0,05 or 0,01, indicate that the actual and predicted input matrices are not statistically different. However, even statistical nonsignificance does not guarantee that the "correct" model has been identified, but only that this proposed model fits the observed covariances and correlations well.	p> 0,05 or p>0,01, associated with the value of χ^2
Goodness-of-fit Index (GFI)	It is a nonstatistical measure ranging in value from 0 (poor fit) to 1,0 (perfect fit). It represents the overall degree of fit (the squared residuals from prediction compared with the actual data), but is not adjusted for degrees of freedom. Higher values indicate better fit, but no absolute threshold levels for acceptability have been established.	Value greater or equal to 0,9.
Root Mean Square Error of Approximation ((RMSEA)	The RMSEA is the discrepancy per degree of freedom. The value is representative of the goodness-of-fit that could be expected if the model were estimated in the population, not just the sample drawn for estimation.	Value ranging from 0,05 to 0,08.
Incremental Fit Measures		
Adjusted Goodness-of-Fit Index (AGFI)	The AGFI is an extension of the GFI, adjusted by the ratio of degrees of freedom for the proposed model to the degrees of freedom for the null model.	Value greater or equal to 0,9.
Tucker-Lewis Index (TLI)	Also known as nonnormed fit index (NNFI). It combines a measure of parsimony into a comparative index between the proposed and null models, resulting in values ranging from 0 to 1,0.	Value greater or equal to 0,9.
Normed fit Index (NFI)	The NFI is a relative comparison of the proposed model to the null model. Is a measure ranging from 0 (no fit at all) to 1,0 (perfect fit).	Value greater or equal to 0,9.
Comparative Fit Index (CFI)	CFI represent a comparison between the estimated model and a null or independence model. The values lies between 0 and 1,0, and larger values indicate higher levels of goodness-of-fit. The CFI has been found to be more appropriated in a model development strategy or when a smaller sample is available.	Value greater or equal to 0,9.0
Parsimonious Fit Measures		
Normed Chi-Square	This measure is the ratio of the chi-square divided by the degrees of freedom. This measure provides two ways to assess inappropriate models: (1) a model that may be "overfitted", thereby capitalizing on chance, typified by values less than 1,0; and (2) models that are not yet truly representative of the observed data and thus need improvement, having values greater than an upper threshold, either 2,0 or 3,0 or more liberal limit of 5,0.	Value ranging from: lower limit of 1,0; upper limit of 2,0/3,0 or 5,0.

Adapted from Hair *et al.* (1998)

Appendix 4

Voluntary disclosure Index

Category	**Voluntary disclosure items**				
Strategy					
		Didn't disclose	Disclosed without detail	Disclosed with detail	score
15 items	General presentation of the company's strategy			X	2
	Main corporate goals or objectives			X	2
	Main actions taken to achieve the corporate goals			X	2
	Definition of the deadline for each corporate goal	X			0
	Corporate position related to ethic/social questions			X	2
	Corporate position related to environment issues		X		1
	Detailed segment/unit performance			X	2
	Evaluation of the commercial risk			X	2
	Evaluation of the financial risk			X	2
	Evaluation of other risks		X		1
	Corporate I&D/Innovation policy	X			0
	Organizational Culture	X			0
	Main events of the current year			X	2
	Information about annalists			X	2
	Other important strategic information		X		1
					21
Market and Competition					
		Didn't disclose	Disclosed without detail	Disclosed with detail	score
11 items	Identification of the principal markets			X	2
	Specific characteristics of these markets			X	2
	Dimension of the markets			X	2
	Identification of the main competitors			X	2
	Market shares			X	2
	Forecast of market growth		X		1
	Forecast of share market growth			X	2
	Impact of competition on profits		X		1
	Identification of markets' barriers to entry	X			0
	Impact of markets barriers to entry on future profits	X			0
	Impact of competition on future profits		X		1
					15
Management and Production					
		Didn't disclose	Disclosed without detail	Disclosed with detail	score
11 items	Identification of the principal products/ services			X	2
	Specific characteristics of these products/services			X	2
	Proposal for new products/services		X		1
	Changes in production/services methods	X			0
	Investment in production/services		X		1
	Norms of the quality of the product/service	X			0
	Rejection/defect rates (when applicable)				Não Aplicável
	I*nput/output* rates (when applicable)				Não Aplicável
	Volume of materials consumed (when applicable)				Não Aplicável
	Change in product materials (when applicable)				Não Aplicável
	Life cycle of the product (when applicable)				Não Aplicável
					6

Future perspective					
		Didn't disclose	Disclosed without detail	Disclosed with detail	score
8 items	Result application proposal			X	2
	New action/initiative/event			X	2
	Forecasts of sales/results/cash flows	X			0
	Investment forecasts			X	2
	Return rates for each investment project	X			0
	Hypotheses considered in forecast	X			0
	Dividend policy		X		1
	Macroeconomic background			X	2
					9
Marketing					
		Didn't disclose	Disclosed without detail	Disclosed with detail	score
7 items	Disclosure of marketing strategy	X			0
	Disclosure of sales strategy	X			0
	Disclosure of distribution channels		X		1
	Disclosure of sales and marketing costs	X			0
	Disclosure of brand equity/visibility ratings	X			0
	Disclosure of the costumer satisfaction level	X			0
	Disclosure of *customer mix*			X	2
					3
Human capital					
		Didn't disclose	Disclosed without detail	Disclosed with detail	score
8 items	Description of workforce		X		1
	Description of the remuneration/ compensation system		X		1
	Qualification policy of workers		X		1
	Value created by worker	X			0
	Employee retention rates	X			0
	Productivity indicators	X			0
	Strategies to measure human capital	X			0
	Other measures of Human capital	X			0
					3
				Total score	56
				Maximum score	110
				İndex	O,518

Appendix 5

MANOVA's results for Corporate Characteristics

	Country Identification	Mean	Std. Deviation	Tests of Between-Subjects Effects
PER	Portugal	25,853	32,928	F=0,005
	Spain	26,256	23,740	
Leverage	Portugal	0,332	0,167	F=1,303
	Spain	0,289	0,188	
Performance 1	Portugal	0,062	0,033	F=1,436
	Spain	0,072	0,042	
Firm size	Portugal	20,627	1,704	F=1,847
	Spain	21,134	1,864	
Pillai's Trace = 0,072 (df=4); F=2,208				

*p<0,1; **p<0,05; ***p<0,01

MANOVA's results for directors' and supervisors' structures

	Country Identification	Mean	Std. Deviation	Tests of Between-Subjects Effects
Proportion of independent members of the board	Portugal	0,162	0,193	F=16,705***
	Spain	0,301	0,172	
Size of the board	Portugal	0,386	0,171	F=17,667***
	Spain	0,509	0,147	
Proportion of non-executive members of the board	Portugal	0,362	0,254	F=154,987***
	Spain	0,788	0,141	
Monitoring and control index	Portugal	0,605	0,280	F=8,491***
	Spain	0,712	0,145	
Board expertise	Portugal	2,870	2,952	F=4,012**
	Spain	4,620	5,067	
Board's compensation	Portugal	0,297	0,226	F=20,583***
	Spain	0,531	0,285	
Total remuneration of the board divided by the total assets	Portugal	0,004	0,006	F=6,976***
	Spain	0,002	0,002	
Pillai's Trace = 0,576 (df=7); F=25,23***				

*p<0,1; **p<0,05; ***p<0,01

MANOVA's results for ownership structure

	Country Identification	Mean	Std. Deviation	Tests of Between-Subjects Effects
Main shareholder	Portugal	0,459	0,237	F=3,703*
	Spain	0,359	0,243	
State ownership	Portugal	0,032	0,090	F=8,769***
	Spain	0,003	0,021	
Directors ownership	Portugal	0,101	0,189	F=9,491***
	Spain	0,271	0,272	
Qualified participations	Portugal	0,735	0,170	F=11,906***
	Spain	0,590	0,201	
Pillai's Trace = 0,251 (df=4); F=10,06***				

*p<0,1; **p<0,05; ***p<0,01

MANOVA's results for voluntary disclosure variables

	Country Identification	Mean	Std. Deviation	Tests of Between-Subjects Effects
Total disclosure index	Portugal	0,415	0,143	F=6,993***
	Spain	0,490	0,150	
Marketing disclosure index	Portugal	0,210	0,192	F=11,113***
	Spain	0,354	0,238	
Strategy disclosure index	Portugal	0,618	0,206	F=4,246**
	Spain	0,691	0,180	
Market and competition disclosure index	Portugal	0,360	0,186	F=0,159
	Spain	0,372	0,155	
Management and production disclosure index	Portugal	0,498	0,215	F=8,765***
	Spain	0,606	0,181	
Future perspective disclosure index	Portugal	0,388	0,193	F=0,035
	Spain	0,381	0,175	
Human capital disclosure index	Portugal	0,264	0,184	F=6,564**
	Spain	0,386	0,268	
Pillai's Trace = 0,111 (df=7); F=2,758**				

*p<0,1; **p<0,05; ***p<0,01

MANOVA's results for information asymmetry proxies

	Country Identification	Mean	Std. Deviation	Tests of Between-Subjects Effects
Turnover ratio	Portugal	0,783	0,731	F= 7,680***
	Spain	1,976	2,610	
Bid-ask spread	Portugal	0,08	0,17	F= 0,443
	Spain	0,11	0,21	
Pillai's Trace = 0,055 (df=2); F=3,960**				

*p<0,1; **p<0,05; ***p<0,01

Appendix 6

Correlations, with Pearson (Spearman) correlations below (above) the diagonal, using strategy category

	INDSTRA	TURNOVER	BIDASK	PERFOR1	FSIZE	PER	LEVERAGE	INDEP	NONEXEC	BSIZE	EXPERTISE	BIG 4	AUDCOM	REMCOM	VARREM	OTHERREM	DIRCAP	STATEOWNER	MAINSHARE	CONTROLINDEX	SIGNIFICANT	MAINFIVE	PERFOR2	DIRCOMP
INDSTRA	1	0,248***	-0,293***	0,325***	0,672***	-0,224**	0,301***	0,218***	0,101	0,335***	0,170**	0,342***	0,207**	-0,489***	0,182***	-0,130	0,175**	-0,039	0,368***	-0,121	-0,071	0,277***	0,277***	0,276***
TURNOVER	-0,058	1	-0,474***	-0,105	0,221***	-0,028	0,127	0,299***	0,213**	0,136	-0,02	-0,059	0,346***	0,024	0,088	0,172**	0,016	0,068	-0,320***	0,155*	-0,505***	-0,424***	-0,072	0,190**
BIDASK	-0,212**	-0,179***	1	0,087	-0,250***	-0,011	-0,188**	-0,107	0,095	-0,076	-0,020	-0,034	0,055	0,060	-0,027	0,036	0,217**	-0,242***	0,136	-0,092	0,227***	0,211**	0,016	0,087
PERFOR1	0,318***	-0,339***	0,043	1	0,243***	-0,226**	-0,091	0,194**	0,046	0,284***	0,144*	0,261***	0,175**	0,149*	0,103	0,106	-0,050	0,136	-0,001	0,288***	-0,018	0,04	0,881***	0,174**
FSIZE	0,649***	0,007	-0,121	0,262***	1	-0,315***	0,555***	0,153*	0,207**	0,501***	0,314***	0,311***	0,265***	0,188**	0,336***	0,212**	-0,157*	0,232***	0,105	0,510***	0,024	0,047	0,116	0,354***
PER	-0,193**	0,113	-0,098	-0,264***	-0,314***	1	-0,286***	-0,018	0,101	-0,12	-0,219**	-0,178**	0,083	0,072	-0,062	-0,026	-0,008	-0,017	-0,099	-0,117	-0,033	-0,031	-0,145	-0,121
LEVERAGE	0,261***	-0,068	-0,104	-0,118	0,545***	-0,149	1	0,098	0,011	0,138	0,146*	0,026	-0,023	0,106	0,189**	0,039	-0,010	0,128	0,168**	0,237***	0,128	0,072	-0,147*	0,138
INDEP	0,226***	0,213**	0,024	0,130	0,149*	-0,086	0,093	1	0,287***	0,180**	0,083	0,210**	0,440***	0,349***	-0,048	0,180**	-0,002	0,087	-0,248***	0,385***	-0,392***	-0,308***	0,150*	0,156*
NONEXEC	0,218***	0,215**	0,014	0,086	0,224***	-0,086	0,007	0,424***	1	0,504***	0,312***	0,149*	0,583***	0,155*	-0,126	0,431***	0,094	-0,014	-0,288***	0,229***	-0,375***	-0,297***	0,057	0,301***
BSIZE	0,404***	-0,018	-0,087	0,270***	0,528***	-0,128	0,174**	0,165*	0,508***	1	0,312***	0,164*	0,422***	0,238***	0,137	0,352***	0,066	0,148*	-0,280***	0,380***	-0,276***	-0,189**	0,300***	0,348***
EXPERTISE	0,136	-0,082	-0,004	0,123	0,340***	-0,199**	0,136	0,055	0,184**	0,408***	1	0,173**	0,029	0,119	0,114	0,143*	0,059	-0,123	-0,083	0,171**	-0,067	-0,064	0,197**	0,218***
BIG 4	0,353***	-0,034	-0,018	0,239***	0,306***	-0,371***	0,042	0,199**	0,244***	0,182**	0,129	1	0,335***	0,126	0,091	0,087	-0,018	0,101	0,073	0,495***	-0,01	0,011	0,214**	0,142
AUDCOM	0,310***	0,200**	0,034	0,121	0,270***	-0,054	-0,014	0,446***	0,701***	0,406***	0,060	0,335***	1	0,149*	0,017	0,346***	0,199**	0,042	-0,215**	0,483***	-0,368***	-0,310***	0,184**	0,286***
REMCOM	0,238***	0,032	0,004	0,196**	0,174**	0,087	0,071	0,346***	0,199**	0,278***	0,088	0,126	0,149*	1	-0,014	0,093	0,044	0,077	-0,066	0,420***	-0,029	0,098	0,116	0,053
VARREM	0,218**	-0,108	-0,094	0,147*	0,265***	-0,172*	0,186**	-0,039	-0,144*	0,065	0,069	0,089	-0,011	-0,022	1	-0,297***	-0,190**	0,022	0,137	0,167*	0,001	0,043	0,050	0,296***
OTHERREM	0,147*	0,068	-0,097	0,030	0,151*	0,012	0,018	0,203**	0,368***	0,283***	0,053	0,061	0,305***	0,080	-0,347***	1	0,135	-0,025	-0,176**	0,118	-0,200**	-0,124	0,102	0,769***
DIRCAP	-0,141	-0,069	0,050	-0,033	-0,125	-0,009	0,027	-0,044	0,052	-0,009	-0,028	0,041	0,160*	0,064	-0,143	0,030	1	-0,212**	-0,126	-0,112	-0,008	-0,008	-0,025	-0,077
STATEOWNER	0,173**	0,002	-0,109	0,126	0,211**	-0,040	0,117	0,082	-0,028	0,173**	-0,095	0,101	0,042	0,077	0,002	-0,030	-0,165*	1	-0,155*	0,257***	-0,107	-0,161*	0,089	-0,014
MAINSHARE	-0,075	-0,247***	0,125	0,025	0,056	-0,015	0,194**	-0,238***	-0,210**	-0,233***	-0,104	0,088	-0,196**	-0,051	0,123	-0,139	0,077	-0,154*	1	-0,004	0,723***	0,738***	-0,044	-0,088
CONTROLINDEX	0,425***	0,038	0,003	0,282**	0,496**	-0,192*	0,201**	0,410***	0,417***	0,441***	0,132	0,525***	0,551***	0,496***	0,130	0,133	-0,039	0,249***	-0,009	1	-0,068	-0,053	0,236***	0,210**
SIGNIFICANT	-0,161*	-0,397***	0,274***	0,056	0,002	-0,022	0,137	-0,446***	-0,324***	-0,193**	-0,070	0,012	-0,323***	-0,032	-0,038	-0,219**	0,200**	-0,089	0,707***	-0,086	1	0,887***	-0,034	-0,223***
MAINFIVE	0,099	-0,322***	0,176**	0,061	0,014	-0,028	0,099	-0,337***	-0,267***	-0,128	-0,064	0,013	-0,284***	0,096	-0,021	-0,148*	0,191*	-0,153*	0,690***	-0,059	0,886***	1	0,022	-0,141
PERFOR2	0,266***	-0,426***	-0,044	0,839***	0,080	-0,128	-0,126	0,050	0,071	0,214**	0,117	0,174**	0,126	0,017	0,079	0,075	-0,023	0,058	0,002	0,155*	0,046	0,069	1	0,113
DIRCOMP	0,298***	0,000	-0,149*	0,132	0,328***	-0,164*	0,138	0,184**	0,252***	0,318***	0,107	0,140*	0,286***	0,059	0,303***	0,788***	-0,096	-0,023	-0,055	0,235***	-0,241***	-0,162*	0,134	1

*** Correlation is significant at the 0.01 level (2-tailed); ** Correlation is significant at the 0.05 level (2-tailed);* Correlation is significant at the 0.1 level (2-tailed).

Correlations, with Pearson (Spearman) correlations below (above) the diagonal, using the management and production category

	INDMANAG	TURNOVER	BIDASK	PERFOR1	FSIZE	PER	LEVERAGE	INDEP	NONEXEC	BSIZE	EXPERTISE	BIG 4	AUDCOM	REMCOM	VARREM	OTHERREM	DIRCAP	STATEOWNER	MAINSHARE	CONTROLINDEX	SIGNIFICANT	MAINFIVE	PERFOR2	DIRCOMP
INDMANAG	1	0,131	-0,105	0,308***	0,351***	-0,004	0,131	0,186**	0,226***	0,327***	0,073	0,122	0,314***	0,242***	0,105	0,260***	-0,054	0,219***	0,184**	0,256***	-0,141	-0,100	0,317***	0,294***
TURNOVER	-0,005	1	-0,474***	-0,105	0,221***	-0,028	0,127	0,299***	0,213**	0,136	-0,02	-0,059	0,346***	0,024	0,088	0,172**	0,016	0,068	-0,320***	0,155*	-0,505***	-0,424***	-0,072	0,190**
BIDASK	-0,138	-0,179***	1	0,087	-0,250***	-0,011	-0,188**	-0,107	0,095	-0,076	-0,020	-0,034	0,055	0,060	-0,027	0,036	0,217**	-0,242**	0,136	-0,092	0,227***	0,211**	0,016	0,087
PERFOR1	0,251***	-0,339***	0,043	1	0,243***	-0,226**	-0,091	0,194**	0,046	0,284***	0,144*	0,261***	0,175**	0,149*	0,103	0,106	-0,050	0,136	-0,001	0,288***	-0,018	0,04	0,881***	0,174**
FSIZE	0,330***	0,007	-0,121	0,262***	1	-0,315***	0,555***	0,153*	0,207**	0,501***	0,314***	0,311***	0,265***	0,188**	0,336***	0,212**	-0,157*	0,232***	0,105	0,510***	0,024	0,047	0,116	0,354***
PER	0,012	0,113	-0,098	-0,264***	-0,314***	1	-0,286***	-0,018	0,101	-0,12	-0,219**	-0,178**	0,083	0,072	-0,062	-0,026	-0,008	-0,017	-0,099	-0,117	-0,033	-0,031	-0,145	-0,121
LEVERAGE	0,105	-0,068	-0,104	-0,118	0,545***	-0,149	1	0,098	0,011	0,138	0,146*	0,026	-0,023	0,106	0,189**	0,039	-0,010	0,128	0,168**	0,237***	0,128	0,072	-0,147*	0,138
INDEP	0215**	0,213**	0,024	0,130	0,149*	-0,086	0,093	1	0,287***	0,180**	0,083	0,210**	0,440***	0,349***	-0,048	0,180**	-0,002	0,087	-0,248***	0,385***	-0,392***	-0,308***	0,150*	0,156*
NONEXEC	0,277***	0,215**	0,014	0,086	0,224***	-0,086	0,007	0,424***	1	0,504***	0,312***	0,149*	0,583***	0,155*	-0,126	0,431***	0,094	-0,014	-0,288***	0,229***	-0,375***	-0,297***	0,057	0,301***
BSIZE	0,347***	-0,018	-0,087	0,270***	0,528***	-0,128	0,174**	0,165*	0,508***	1	0,312***	0,164*	0,422***	0,238***	0,137	0,352***	0,066	0,148*	-0,280***	0,380***	-0,276***	-0,189**	0,300***	0,348***
EXPERTISE	0,081	-0,082	-0,004	0,123	0,340***	-0,199**	0,136	0,055	0,184**	0,408***	1	0,173**	0,029	0,119	0,114	0,143*	0,059	-0,123	-0,083	0,171**	-0,067	-0,064	0,197**	0,218***
BIG 4	0,116	-0,034	-0,018	0,239***	0,306***	-0,371***	0,042	0,199**	0,244***	0,182**	0,129	1	0,335***	0,126	0,091	0,087	-0,018	0,101	0,073	0,495***	-0,01	0,011	0,214**	0,142
AUDCOM	0,330***	0,200**	0,034	0,121	0,270***	-0,054	-0,014	0,446***	0,701***	0,406***	0,060	0,335***	1	0,149*	0,017	0,346***	0,199**	0,042	-0,215**	0,483***	-0,368***	-0,310***	0,184**	0,286***
REMCOM	0,221***	0,032	0,004	0,196**	0,174**	0,087	0,071	0,346***	0,199**	0,278***	0,088	0,126	0,149*	1	-0,014	0,093	0,044	0,077	-0,066	0,420***	-0,029	0,098	0,116	0,053
VARREM	0,073	-0,108	-0,094	0,147*	0,265***	-0,172*	0,186**	-0,039	-0,144*	0,065	0,069	0,089	-0,011	-0,022	1	-0,297***	-0,190**	0,022	0,137	0,167*	0,001	0,043	0,050	0,296***
OTHERREM	0,241***	0,068	-0,097	0,030	0,151*	0,012	0,018	0,203**	0,368***	0,283***	0,053	0,061	0,305***	0,080	-0,347***	1	0,135	-0,025	-0,176**	0,118	-0,200**	-0,124	0,102	0,769***
DIRCAP	0,001	-0,069	0,050	-0,033	-0,125	-0,009	0,027	-0,044	0,052	-0,009	-0,028	0,041	0,160*	0,064	-0,143	0,030	1	-0,212**	-0,126	-0,112	-0,008	-0,008	-0,025	-0,077
STATEOWNER	0,229***	0,002	-0,109	0,126	0,211**	-0,040	0,117	0,082	-0,028	0,173**	-0,095	0,101	0,042	0,077	0,002	-0,030	-0,165*	1	-0,155*	0,257***	-0,107	-0,161*	0,089	-0,014
MAINSHARE	-0,191**	-0,247***	0,125	0,025	0,056	-0,015	0,194**	-0,238***	-0,210**	-0,233***	-0,104	0,088	-0,196**	-0,051	0,123	-0,139	0,077	-0,154*	1	-0,004	0,723***	0,738***	-0,044	-0,088
CONTROLINDEX	0,287***	0,038	0,003	0,282**	0,496**	-0,192*	0,201**	0,410***	0,417***	0,441***	0,132	0,525***	0,551***	0,496***	0,130	0,133	-0,039	0,249***	-0,009	1	-0,068	-0,053	0,236***	0,210**
SIGNIFICANT	-0,180**	-0,397***	0,274***	0,056	0,002	-0,022	0,137	-0,446***	-0,324***	-0,193**	-0,070	0,012	-0,323***	-0,032	-0,038	-0,219**	0,200**	-0,089	0,707***	-0,086	1	0,887***	-0,034	-0,223***
MAINFIVE	-0,128	-0,322***	0,176**	0,061	0,014	-0,028	0,099	-0,337***	-0,267***	-0,128	-0,064	0,013	-0,284***	0,096	-0,021	-0,148*	0,191*	-0,153*	0,690***	-0,059	0,886***	1	0,022	-0,141
PERFOR2	0,205**	-0,426***	-0,044	0,839***	0,080	-0,128	-0,126	0,050	0,071	0,214**	0,117	0,174**	0,126	0,017	0,079	0,075	-0,023	0,058	0,002	0,155*	0,046	0,069	1	0,113
DIRCOMP	0,288***	0,000	-0,149*	0,132	0,328***	-0,164*	0,138	0,184**	0,252***	0,318***	0,107	0,140*	0,286***	0,059	0,303***	0,788***	-0,096	-0,023	-0,055	0,235***	-0,241***	-0,162*	0,134	1

*** Correlation is significant at the 0.01 level (2-tailed); ** Correlation is significant at the 0.05 level (2-tailed);* Correlation is significant at the 0.1 level (2-tailed).

Correlations, with Pearson (Spearman) correlations below (above) the diagonal, using the future perspective category

	INDFUT	TURNOVER	BIDASK	PERFOR1	FSIZE	PER	LEVERAGE	INDEP	NONEXEC	BSIZE	EXPERTISE	BIG 4	AUDCOM	REMCOM	VARREM	OTHERREM	DIRCAP	STATEOWNER	MAINSHARE	CONTROLINDEX	SIGNIFICANT	MAINFIVE	PERFOR2	DIRCOMP
INDFUT	1	0,239***	-0,358***	0,137	0,525***	-0,129	0,304***	0,092	0,071	0,236***	0,087	0,147*	0,091	0,119	0,193**	0,122	-0,176**	0,143*	0,093	0,291***	-0,026	0,005	0,125	0,234***
TURNOVER	0,033	1	-0,474***	-0,105	0,221***	-0,028	0,127	0,299***	0,213**	0,136	-0,02	-0,059	0,346***	0,024	0,088	0,172**	0,016	0,068	-0,320***	0,155*	-0,505***	-0,424***	-0,072	0,190**
BIDASK	-0,186**	-0,179***	1	0,087	-0,250***	-0,011	-0,188**	-0,107	0,095	-0,076	-0,020	-0,034	0,055	0,060	-0,027	0,036	0,217**	-0,242***	0,136	-0,092	0,227***	0,211**	0,016	0,087
PERFOR1	0,173**	-0,339***	0,043	1	0,243***	-0,226**	-0,091	0,194**	0,046	0,284***	0,144*	0,261***	0,175**	0,149*	0,103	0,106	-0,050	0,136	-0,001	0,288***	-0,018	0,04	0,881***	0,174**
FSIZE	0,527***	0,007	-0,121	0,262***	1	-0,315***	0,555***	0,153*	0,207**	0,501***	0,314***	0,311***	0,265***	0,188**	0,336***	0,212**	-0,157*	0,232***	0,105	0,510***	0,024	0,047	0,116	0,354***
PER	-0,062	0,113	-0,098	-0,264***	-0,314***	1	-0,286***	-0,018	0,101	-0,12	-0,219**	-0,178**	0,083	0,072	-0,062	-0,026	-0,008	-0,017	-0,099	-0,117	-0,033	-0,031	-0,145	-0,121
LEVERAGE	0,286***	-0,068	-0,104	-0,118	0,545***	-0,149	1	0,098	0,011	0,138	0,146*	0,026	-0,023	0,106	0,189**	0,039	-0,010	0,128	0,168**	0,237***	0,128	0,072	-0,147*	0,138
INDEP	0,092	0,213**	0,024	0,130	0,149*	-0,086	0,093	1	0,287***	0,180**	0,083	0,210**	0,440***	0,349***	-0,048	0,180**	-0,002	0,087	-0,248***	0,385***	-0,392***	-0,308***	0,150*	0,156*
NONEXEC	0,088	0,215**	0,014	0,086	0,224***	-0,086	0,007	0,424***	1	0,504***	0,312***	0,149*	0,583***	0,155*	-0,126	0,431***	0,094	-0,014	-0,288***	0,229***	-0,375***	-0,297***	0,057	0,301***
BSIZE	0,257***	-0,018	-0,087	0,270***	0,528***	-0,128	0,174**	0,165*	0,508***	1	0,312***	0,164*	0,422***	0,238***	0,137	0,352***	0,066	0,148*	-0,280***	0,380***	-0,276***	-0,189**	0,300***	0,348***
EXPERTISE	0,117	-0,082	-0,004	0,123	0,340***	-0,199**	0,136	0,055	0,184**	0,408***	1	0,173**	0,029	0,119	0,114	0,143*	0,059	-0,123	-0,083	0,171**	-0,067	-0,064	0,197**	0,218***
BIG 4	0,159*	-0,034	-0,018	0,239***	0,306***	-0,371***	0,042	0,199**	0,244***	0,182**	0,129	1	0,335***	0,126	0,091	0,087	-0,018	0,101	0,073	0,495***	-0,01	0,011	0,214**	0,142
AUDCOM	0,101	0,200**	0,034	0,121	0,270***	-0,054	-0,014	0,446***	0,701***	0,406***	0,060	0,335***	1	0,149*	0,017	0,346***	0,199**	0,042	-0,215**	0,483***	-0,368***	-0,310***	0,184**	0,286***
REMCOM	0,134	0,032	0,004	0,196**	0,174**	0,087	0,071	0,346***	0,199**	0,278***	0,088	0,126	0,149*	1	-0,014	0,093	0,044	0,077	-0,066	0,420***	-0,029	0,098	0,116	0,053
VARREM	0,168**	-0,108	-0,094	0,147*	0,265***	-0,172*	0,186**	-0,039	-0,144*	0,065	0,069	0,089	-0,011	-0,022	1	-0,297***	-0,190**	0,022	0,137	0,167*	0,001	0,043	0,050	0,296***
OTHERREM	0,134	0,068	-0,097	0,030	0,151*	0,012	0,018	0,203**	0,368***	0,283***	0,053	0,061	0,305***	0,080	-0,347***	1	0,135	-0,025	-0,176**	0,118	-0,200**	-0,124	0,102	0,769***
DIRCAP	-0,138	-0,069	0,050	-0,033	-0,125	-0,009	0,027	-0,044	0,052	-0,009	-0,028	0,041	0,160*	0,064	-0,143	0,030	1	-0,212**	-0,126	-0,112	-0,008	-0,008	-0,025	-0,077
STATEOWNER	0,119	0,002	-0,109	0,126	0,211**	-0,040	0,117	0,082	-0,028	0,173**	-0,095	0,101	0,042	0,077	0,002	-0,030	-0,165*	1	-0,155*	0,257***	-0,107	-0,161*	0,089	-0,014
MAINSHARE	0,080	-0,247***	0,125	0,025	0,056	-0,015	0,194**	-0,238***	-0,210**	-0,233***	-0,104	0,088	-0,196**	-0,051	0,123	-0,139	0,077	-0,154*	1	-0,004	0,723***	0,738***	-0,044	-0,088
CONTROLINDEX	0,289***	0,038	0,003	0,282**	0,496**	-0,192*	0,201**	0,410***	0,417***	0,441***	0,132	0,525***	0,551***	0,496***	0,130	0,133	-0,039	0,249***	-0,009	1	-0,068	-0,053	0,236***	0,210**
SIGNIFICANT	-0,033	-0,397***	0,274***	0,056	0,002	-0,022	0,137	-0,446***	-0,324***	-0,193**	-0,070	0,012	-0,323***	-0,032	-0,038	-0,219**	0,200**	-0,089	0,707***	-0,086	1	0,887***	-0,034	-0,223***
MAINFIVE	0,028	-0,322***	0,176**	0,061	0,014	-0,028	0,099	-0,337***	-0,267***	-0,128	-0,064	0,013	-0,284***	0,096	-0,021	-0,148*	0,191*	-0,153*	0,690***	-0,059	0,886***	1	0,022	-0,141
PERFOR2	0,102	-0,426***	-0,044	0,839***	0,080	-0,128	-0,126	0,050	0,071	0,214**	0,117	0,174**	0,126	0,017	0,079	0,075	-0,023	0,058	0,002	0,155*	0,046	0,069	1	0,113
DIRCOMP	0,234***	0,000	-0,149*	0,132	0,328***	-0,164*	0,138	0,184**	0,252***	0,318***	0,107	0,140*	0,286***	0,059	0,303***	0,788***	-0,096	-0,023	-0,055	0,235***	-0,241***	-0,162*	0,134	1

*** Correlation is significant at the 0.01 level (2-tailed); ** Correlation is significant at the 0.05 level (2-tailed);* Correlation is significant at the 0.1 level (2-tailed).

Correlations, with Pearson (Spearman) correlations below (above) the diagonal, using the market and competition category

	INDCOMP	TURNOVER	BIDASK	PERFOR1	FSIZE	PER	LEVERAGE	INDEP	NONEXEC	BSIZE	EXPERTISE	BIG 4	AUDCOM	REMCOM	VARREM	OTHERREM	DIRCAP	STATEOWNER	MAINSHARE	CONTROLINDEX	SIGNIFICANT	MAINFIVE	PERFOR2	DIRCOMP
INDCOMP	1	0,182**	-0,235***	0,167*	0,466***	-0,096	0,242***	0,075	-0,097	0,279***	0,085	0,119	0,129	0,210**	0,248***	0,047	-0,137	-0,007	0,074	0,206**	0,010	0,057	0,153*	0,196*
TURNOVER	-0,047	1	-0,474***	-0,105	0,221***	-0,028	0,127	0,299***	0,213**	0,136	-0,02	-0,059	0,346***	0,024	0,088	0,172**	0,016	0,068	-0,320***	0,155*	-0,505***	-0,424***	-0,072	0,190**
BIDASK	-0,208**	-0,179***	1	0,087	-0,250***	-0,011	-0,188**	-0,107	0,095	-0,076	-0,020	-0,034	0,055	0,060	-0,027	0,036	0,217**	-0,242***	0,136	-0,092	0,227***	0,211**	0,016	0,087
PERFOR1	0,194**	-0,339***	0,043	1	0,243***	-0,226**	-0,091	0,194**	0,046	0,284***	0,144*	0,261***	0,175**	0,149*	0,103	0,106	-0,050	0,136	-0,001	0,288***	-0,018	0,04	0,881***	0,174**
FSIZE	0,479***	0,007	-0,121	0,262***	1	-0,315***	0,555***	0,153*	0,207**	0,501***	0,314***	0,311***	0,265***	0,188**	0,336***	0,212**	-0,157*	0,232***	0,105	0,510***	0,024	0,047	0,116	0,354***
PER	-0,033	0,113	-0,098	-0,264***	-0,314***	1	-0,286***	-0,018	0,101	-0,12	-0,219**	-0,178**	0,083	0,072	-0,062	-0,026	-0,008	-0,017	-0,099	-0,117	-0,033	-0,031	-0,145	-0,121
LEVERAGE	0,231***	-0,068	-0,104	-0,118	0,545***	-0,149	1	0,098	0,011	0,138	0,146*	0,026	-0,023	0,106	0,189**	0,039	-0,010	0,128	0,168**	0,237***	0,128	0,072	-0,147*	0,138
INDEP	0,093	0,213**	0,024	0,130	0,149*	-0,086	0,093	1	0,287***	0,180**	0,083	0,210**	0,440***	0,349***	-0,048	0,180**	-0,002	0,087	-0,248***	0,385***	-0,392***	-0,308***	0,150*	0,156*
NONEXEC	-0,008	0,215**	0,014	0,086	0,224***	-0,086	0,007	0,424***	1	0,504***	0,312***	0,149*	0,583***	0,155*	-0,126	0,431***	0,094	-0,014	-0,288***	0,229***	-0,375***	-0,297***	0,057	0,301***
BSIZE	0,294***	-0,018	-0,087	0,270***	0,528***	-0,128	0,174**	0,165*	0,508***	1	0,312***	0,164*	0,422***	0,238***	0,137	0,352***	0,066	0,148*	-0,280***	0,380***	-0,276***	-0,189**	0,300***	0,348***
EXPERTISE	0,120	-0,082	-0,004	0,123	0,340***	-0,199**	0,136	0,055	0,184**	0,408***	1	0,173**	0,029	0,119	0,114	0,143*	0,059	-0,123	-0,083	0,171**	-0,067	-0,064	0,197**	0,218***
BIG 4	0,155*	-0,034	-0,018	0,239***	0,306***	-0,371***	0,042	0,199**	0,244***	0,182**	0,129	1	0,335***	0,126	0,091	0,087	-0,018	0,101	0,073	0,495***	-0,01	0,011	0,214**	0,142
AUDCOM	0,147*	0,200**	0,034	0,121	0,270***	-0,054	-0,014	0,446***	0,701***	0,406***	0,060	0,335***	1	0,149*	0,017	0,346***	0,199**	0,042	-0,215**	0,483***	-0,368***	-0,310***	0,184**	0,286***
REMCOM	0,202**	0,032	0,004	0,196**	0,174**	0,087	0,071	0,346***	0,199**	0,278***	0,088	0,126	0,149*	1	-0,014	0,093	0,044	0,077	-0,066	0,420***	-0,029	0,098	0,116	0,053
VARREM	0,232***	-0,108	-0,094	0,147*	0,265***	-0,172*	0,186**	-0,039	-0,144*	0,065	0,069	0,089	-0,011	-0,022	1	-0,297***	-0,190**	0,022	0,137	0,167*	0,001	0,043	0,050	0,296***
OTHERREM	0,039	0,068	-0,097	0,030	0,151*	0,012	0,018	0,203**	0,368***	0,283***	0,053	0,061	0,305***	0,080	-0,347***	1	0,135	-0,025	-0,176**	0,118	-0,200**	-0,124	0,102	0,769***
DIRCAP	-0,085	-0,069	0,050	-0,033	-0,125	-0,009	0,027	-0,044	0,052	-0,009	-0,028	0,041	0,160*	0,064	-0,143	0,030	1	-0,212**	-0,126	-0,112	-0,008	-0,008	-0,025	-0,077
STATEOWNER	-0,009	0,002	-0,109	0,126	0,211**	-0,040	0,117	0,082	-0,028	0,173**	-0,095	0,101	0,042	0,077	0,002	-0,030	-0,165*	1	-0,155*	0,257***	-0,107	-0,161*	0,089	-0,014
MAINSHARE	0,081	-0,247***	0,125	0,025	0,056	-0,015	0,194**	-0,238***	-0,210**	-0,233***	-0,104	0,088	-0,196**	-0,051	0,123	-0,139	0,077	-0,154*	1	-0,004	0,723***	0,738***	-0,044	-0,088
CONTROLINDEX	0,250***	0,038	0,003	0,282**	0,496**	-0,192*	0,201**	0,410***	0,417***	0,441***	0,132	0,525***	0,551***	0,496***	0,130	0,133	-0,039	0,249***	-0,009	1	-0,068	-0,053	0,236***	0,210**
SIGNIFICANT	-0,005	-0,397***	0,274***	0,056	0,002	-0,022	0,137	-0,446***	-0,324***	-0,193**	-0,070	0,012	-0,323***	-0,032	-0,038	-0,219**	0,200**	-0,089	0,707***	-0,086	1	0,887***	-0,034	-0,223***
MAINFIVE	0,045	-0,322***	0,176**	0,061	0,014	-0,028	0,099	-0,337***	-0,267***	-0,128	-0,064	0,013	-0,284***	0,096	-0,021	-0,148*	0,191*	-0,153*	0,690***	-0,059	0,886***	1	0,022	-0,141
PERFOR2	0,188**	-0,426***	-0,044	0,839***	0,080	-0,128	-0,126	0,050	0,071	0,214**	0,117	0,174**	0,126	0,017	0,079	0,075	-0,023	0,058	0,002	0,155*	0,046	0,069	1	0,113
DIRCOMP	0,204**	0,000	-0,149*	0,132	0,328***	-0,164*	0,138	0,184**	0,252***	0,318***	0,107	0,140*	0,286***	0,059	0,303***	0,788***	-0,096	-0,023	-0,055	0,235***	-0,241***	-0,162*	0,134	1

*** Correlation is significant at the 0.01 level (2-tailed); ** Correlation is significant at the 0.05 level (2-tailed);* Correlation is significant at the 0.1 level (2-tailed).

Correlations, with Pearson (Spearman) correlations below (above) the diagonal, using the marketing category

	INDSMARK	TURNOVER	BIDASK	PERFOR1	FSIZE	PER	LEVERAGE	INDEP	NONEXEC	BSIZE	EXPERTISE	BIG 4	AUDCOM	REMCOM	VARREM	OTHERREM	DIRCAP	STATEOWNER	MAINSHARE	CONTROLINDEX	SIGNIFICANT	MAINFIVE	PERFOR2	DIRCOMP
INDMARK	1	0,201**	-0,058	0,215**	0,423***	-0,134	0,222***	0,157*	0,261***	0,371***	0,202**	0,227***	0,338***	0,170**	0,249***	0,181*	-0,004	0,135	-0,191**	0,339***	-0,158*	-0,132	0,176**	0,298**
TURNOVER	0,010	1	-0,474***	-0,105	0,221***	-0,028	0,127	0,299***	0,213**	0,136	-0,02	-0,059	0,346***	0,024	0,088	0,172**	0,016	0,068	-0,320***	0,155*	-0,505***	-0,424***	-0,072	0,190**
BIDASK	-0,134	-0,179***	1	0,087	-0,250***	-0,011	-0,188**	-0,107	0,095	-0,076	-0,020	-0,034	0,055	0,060	-0,027	0,036	0,217**	-0,242**	0,136	-0,092	0,227***	0,211**	0,016	0,087
PERFOR1	0,158*	-0,339***	0,043	1	0,243***	-0,226**	-0,091	0,194**	0,046	0,284***	0,144*	0,261***	0,175**	0,149*	0,103	0,106	-0,050	0,136	-0,001	0,288***	-0,018	0,04	0,881***	0,174**
FSIZE	0,500***	0,007	-0,121	0,262***	1	-0,315***	0,555***	0,153*	0,207**	0,501***	0,314***	0,311***	0,265***	0,188**	0,336***	0,212**	-0,157*	0,232***	0,105	0,510***	0,024	0,047	0,116	0,354***
PER	-0,111	0,113	-0,098	-0,264***	-0,314***	1	-0,286***	-0,018	0,101	-0,12	-0,219**	-0,178**	0,083	0,072	-0,062	-0,026	-0,008	-0,017	-0,099	-0,117	-0,033	-0,031	-0,145	-0,121
LEVERAGE	0,213**	-0,068	-0,104	-0,118	0,545***	-0,149	1	0,098	0,011	0,138	0,146*	0,026	-0,023	0,106	0,189**	0,039	-0,010	0,128	0,168**	0,237***	0,128	0,072	-0,147*	0,138
INDEP	0,156*	0,213**	0,024	0,130	0,149*	-0,086	0,093	1	0,287***	0,180**	0,083	0,210**	0,440***	0,349***	-0,048	0,180**	-0,002	0,087	-0,248***	0,385***	-0,392***	-0,308***	0,150*	0,156*
NONEXEC	0,222***	0,215**	0,014	0,086	0,224***	-0,086	0,007	0,424***	1	0,504***	0,312***	0,149*	0,583***	0,155*	-0,126	0,431***	0,094	-0,014	-0,288***	0,229***	-0,375***	-0,297***	0,057	0,301***
BSIZE	0,345***	-0,018	-0,087	0,270***	0,528***	-0,128	0,174**	0,165*	0,508***	1	0,312***	0,164*	0,422***	0,238***	0,137	0,352***	0,066	0,148*	-0,280***	0,380***	-0,276***	-0,189**	0,300***	0,348***
EXPERTISE	0,204**	-0,082	-0,004	0,123	0,340***	-0,199**	0,136	0,055	0,184**	0,408***	1	0,173**	0,029	0,119	0,114	0,143*	0,059	-0,123	-0,083	0,171**	-0,067	-0,064	0,197**	0,218***
BIG 4	0,224***	-0,034	-0,018	0,239***	0,306***	-0,371***	0,042	0,199**	0,244***	0,182**	0,129	1	0,335***	0,126	0,091	0,087	-0,018	0,101	0,073	0,495***	-0,01	0,011	0,214**	0,142
AUDCOM	0,289***	0,200**	0,034	0,121	0,270***	-0,054	-0,014	0,446***	0,701***	0,406***	0,060	0,335***	1	0,149*	0,017	0,346***	0,199**	0,042	-0,215**	0,483***	-0,368***	-0,310***	0,184**	0,286***
REMCOM	0,166**	0,032	0,004	0,196**	0,174**	0,087	0,071	0,346***	0,199**	0,278***	0,088	0,126	0,149*	1	-0,014	0,093	0,044	0,077	-0,066	0,420***	-0,029	0,098	0,116	0,053
VARREM	0,220***	-0,108	-0,094	0,147*	0,265***	-0,172*	0,186**	-0,039	-0,144*	0,065	0,069	0,089	-0,011	-0,022	1	-0,297***	-0,190**	0,022	0,137	0,167*	0,001	0,043	0,050	0,296***
OTHERREM	0,110	0,068	-0,097	0,030	0,151*	0,012	0,018	0,203**	0,368***	0,283***	0,053	0,061	0,305***	0,080	-0,347***	1	0,135	-0,025	-0,176**	0,118	-0,200**	-0,124	0,102	0,769***
DIRCAP	0,030	-0,069	0,050	-0,033	-0,125	-0,009	0,027	-0,044	0,052	-0,009	-0,028	0,041	0,160*	0,064	-0,143	0,030	1	-0,212**	-0,126	-0,112	-0,008	-0,008	-0,025	-0,077
STATEOWNER	0,091	0,002	-0,109	0,126	0,211**	-0,040	0,117	0,082	-0,028	0,173**	-0,095	0,101	0,042	0,077	0,002	-0,030	-0,165*	1	-0,155*	0,257***	-0,107	-0,161*	0,089	-0,014
MAINSHARE	-0,170**	-0,247***	0,125	0,025	0,056	-0,015	0,194**	-0,238***	-0,210**	-0,233***	-0,104	0,088	-0,196**	-0,051	0,123	-0,139	0,077	-0,154*	1	-0,004	0,723***	0,738***	-0,044	-0,088
CONTROLINDEX	0,345***	0,038	0,003	0,282**	0,496**	-0,192*	0,201**	0,410***	0,417***	0,441***	0,132	0,525***	0,551***	0,496***	0,130	0,133	-0,039	0,249***	-0,009	1	-0,068	-0,053	0,236***	0,210**
SIGNIFICANT	-0,150*	-0,397***	0,274***	0,056	0,002	-0,022	0,137	-0,446***	-0,324***	-0,193**	-0,070	0,012	-0,323***	-0,032	-0,038	-0,219**	0,200**	-0,089	0,707***	-0,086	1	0,887***	-0,034	-0,223***
MAINFIVE	-0,119	-0,322***	0,176**	0,061	0,014	-0,028	0,099	-0,337***	-0,267***	-0,128	-0,064	0,013	-0,284***	0,096	-0,021	-0,148*	0,191*	-0,153*	0,690***	-0,059	0,886***	1	0,022	-0,141
PERFOR2	0,094	-0,426***	-0,044	0,839***	0,080	-0,128	-0,126	0,050	0,071	0,214**	0,117	0,174**	0,126	0,017	0,079	0,075	-0,023	0,058	0,002	0,155*	0,046	0,069	1	0,113
DIRCOMP	0,266***	0,000	-0,149*	0,132	0,328***	-0,164*	0,138	0,184**	0,252***	0,318***	0,107	0,140*	0,286***	0,059	0,303***	0,788***	-0,096	-0,023	-0,055	0,235***	-0,241***	-0,162*	0,134	1

*** Correlation is significant at the 0.01 level (2-tailed); ** Correlation is significant at the 0.05 level (2-tailed);* Correlation is significant at the 0.1 level (2-tailed).

Correlations, with Pearson (Spearman) correlations below (above) the diagonal, using human capital category

	INDHCAP	TURNOVER	BIDASK	PERFOR1	FSIZE	PER	LEVERAGE	INDEP	NONEXEC	BSIZE	EXPERTISE	BIG 4	AUDCOM	REMCOM	VARREM	OTHERREM	DIRCAP	STATEOWNER	MAINSHARE	CONTROLINDEX	SIGNIFICANT	MAINFIVE	PERFOR2	DIRCOMP
INDHCAP	1	0,213**	-0,117	0,293***	0,575***	-0,329***	0,270***	0,139	0,200**	0,339***	0,213**	0,249***	0,234***	0,201**	0,307***	0,146*	-0,049	0,161*	-0,075	0,290***	-0,118	-0,040	0,239***	0,314***
TURNOVER	-0,044	1	-0,474***	-0,105	0,221***	-0,028	0,127	0,299***	0,213**	0,136	-0,02	-0,059	0,346***	0,024	0,088	0,172**	0,016	0,068	-0,320***	0,155*	-0,505***	-0,424***	-0,072	0,190**
BIDASK	-0,140	-0,179***	1	0,087	-0,250***	-0,011	-0,188**	-0,107	0,095	-0,076	-0,020	-0,034	0,055	0,060	-0,027	0,036	0,217**	-0,242**	0,136	-0,092	0,227***	0,211**	0,016	0,087
PERFOR1	0,248***	-0,339***	0,043	1	0,243***	-0,226**	-0,091	0,194**	0,046	0,284***	0,144*	0,261***	0,175**	0,149*	0,103	0,106	-0,050	0,136	-0,001	0,288***	-0,018	0,04	0,881***	0,174**
FSIZE	0,596***	0,007	-0,121	0,262***	1	-0,315***	0,555***	0,153*	0,207**	0,501***	0,314***	0,311***	0,265***	0,188**	0,336***	0,212**	-0,157*	0,232***	0,105	0,510***	0,024	0,047	0,116	0,354***
PER	-0,289***	0,113	-0,098	-0,264***	-0,314***	1	-0,286***	-0,018	0,101	-0,12	-0,219**	-0,178**	0,083	0,072	-0,062	-0,026	-0,008	-0,017	-0,099	-0,117	-0,033	-0,031	-0,145	-0,121
LEVERAGE	0,268***	-0,068	-0,104	-0,118	0,545***	-0,149	1	0,098	0,011	0,138	0,146*	0,026	-0,023	0,106	0,189**	0,039	-0,010	0,128	0,168**	0,237***	0,128	0,072	-0,147*	0,138
INDEP	0,155*	0,213**	0,024	0,130	0,149*	-0,086	0,093	1	0,287***	0,180**	0,083	0,210**	0,440***	0,349***	-0,048	0,180**	-0,002	0,087	-0,248***	0,385***	-0,392***	-0,308***	0,150*	0,156*
NONEXEC	0,205*	0,215**	0,014	0,086	0,224***	-0,086	0,007	0,424***	1	0,504***	0,312***	0,149*	0,583***	0,155*	-0,126	0,431***	0,094	-0,014	-0,288***	0,229***	-0,375***	-0,297***	0,057	0,301***
BSIZE	0,382***	-0,018	-0,087	0,270***	0,528***	-0,128	0,174**	0,165*	0,508***	1	0,312***	0,164*	0,422***	0,238***	0,137	0,352***	0,066	0,148*	-0,280***	0,380***	-0,276***	-0,189**	0,300***	0,348***
EXPERTISE	0,250***	-0,082	-0,004	0,123	0,340***	-0,199**	0,136	0,055	0,184**	0,408***	1	0,173**	0,029	0,119	0,114	0,143*	0,059	-0,123	-0,083	0,171**	-0,067	-0,064	0,197**	0,218***
BIG 4	0,246***	-0,034	-0,018	0,239***	0,306***	-0,371***	0,042	0,199**	0,244***	0,182**	0,129	1	0,335***	0,126	0,091	0,087	-0,018	0,101	0,073	0,495***	-0,01	0,011	0,214**	0,142
AUDCOM	0,232***	0,200**	0,034	0,121	0,270***	-0,054	-0,014	0,446***	0,701***	0,406***	0,060	0,335***	1	0,149*	0,017	0,346***	0,199**	0,042	-0,215**	0,483***	-0,368***	-0,310***	0,184**	0,286***
REMCOM	0,191**	0,032	0,004	0,196**	0,174**	0,087	0,071	0,346***	0,199**	0,278***	0,088	0,126	0,149*	1	-0,014	0,093	0,044	0,077	-0,066	0,420***	-0,029	0,098	0,116	0,053
VARREM	0,234***	-0,108	-0,094	0,147*	0,265***	-0,172*	0,186**	-0,039	-0,144*	0,065	0,069	0,089	-0,011	-0,022	1	-0,297***	-0,190**	0,022	0,137	0,167*	0,001	0,043	0,050	0,296***
OTHERREM	0,137	0,068	-0,097	0,030	0,151*	0,012	0,018	0,203**	0,368***	0,283***	0,053	0,061	0,305***	0,080	-0,347***	1	0,135	-0,025	-0,176**	0,118	-0,200**	-0,124	0,102	0,769***
DIRCAP	-0,026	-0,069	0,050	-0,033	-0,125	-0,009	0,027	-0,044	0,052	-0,009	-0,028	0,041	0,160*	0,064	-0,143	0,030	1	-0,212**	-0,126	-0,112	-0,008	-0,008	-0,025	-0,077
STATEOWNER	0,167**	0,002	-0,109	0,126	0,211**	-0,040	0,117	0,082	-0,028	0,173**	-0,095	0,101	0,042	0,077	0,002	-0,030	-0,165*	1	-0,155*	0,257***	-0,107	-0,161*	0,089	-0,014
MAINSHARE	-0,106	-0,247***	0,125	0,025	0,056	-0,015	0,194**	-0,238***	-0,210**	-0,233***	-0,104	0,088	-0,196**	-0,051	0,123	-0,139	0,077	-0,154*	1	-0,004	0,723***	0,738***	-0,044	-0,088
CONTROLINDEX	0,301***	0,038	0,003	0,282**	0,496**	-0,192*	0,201**	0,410***	0,417***	0,441***	0,132	0,525***	0,551***	0,496***	0,130	0,133	-0,039	0,249***	-0,009	1	-0,068	-0,053	0,236***	0,210**
SIGNIFICANT	-0,121	-0,397***	0,274***	0,056	0,002	-0,022	0,137	-0,446***	-0,324***	-0,193**	-0,070	0,012	-0,323***	-0,032	-0,038	-0,219**	0,200**	-0,089	0,707***	-0,086	1	0,887***	-0,034	-0,223***
MAINFIVE	-0,052	-0,322***	0,176**	0,061	0,014	-0,028	0,099	-0,337***	-0,267***	-0,128	-0,064	0,013	-0,284***	0,096	-0,021	-0,148*	0,191*	-0,153*	0,690***	-0,059	0,886***	1	0,022	-0,141
PERFOR2	0,205**	-0,426***	-0,044	0,839***	0,080	-0,128	-0,126	0,050	0,071	0,214**	0,117	0,174**	0,126	0,017	0,079	0,075	-0,023	0,058	0,002	0,155*	0,046	0,069	1	0,113
DIRCOMP	0,298***	0,000	-0,149*	0,132	0,328***	-0,164*	0,138	0,184**	0,252***	0,318***	0,107	0,140*	0,286***	0,059	0,303***	0,788***	-0,096	-0,023	-0,055	0,235***	-0,241***	-0,162*	0,134	1

*** Correlation is significant at the 0.01 level (2-tailed); ** Correlation is significant at the 0.05 level (2-tailed);* Correlation is significant at the 0.1 level (2-tailed).

Appendix 7

Matrix of variance/covariance of the vector of observations of the standardized observed variables

	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	Y11	X1	X2	X3	X4	X5	X6	X7	X8	X9
Y1	1																			
Y2	0.5233	1																		
Y3	0.5406	0.2289	1																	
Y4	0.5554	0.4787	0.3083	1																
Y5	0.5318	0.3736	0.5508	0.2861	1															
Y6	0.6914	0.4198	0.4262	0.4269	0.6168	1														
Y7	0.3950	0.2846	0.1627	0.2892	0.1000	0.2944	1													
Y8	0.4277	0.2624	0.3183	0.2124	0.2139	0.3076	0.6583	1												
Y9	0.3889	0.1800	0.3469	0.2048	0.2162	0.2282	0.5603	0.8422	1											
Y10	0.0777	0.0568	0.0640	0.1712	0.1191	0.0050	-0.2198	-0.2363	-0.1717	1										
Y11	-0.3166	-0.1641	-0.1543	-0.2658	-0.1605	-0.1605	-0.0989	-0.0552	-0.0748	-0.2869	1									
X1	0.2638	0.1820	0.2002	0.1433	0.2036	0.1920	0.0410	0.1885	0.1967	0.2515	0.0012	1								
X2	0.3935	0.2757	0.3362	0.2625	0.3082	0.3453	0.3365	0.2847	0.3166	0.0382	-0.1863	0.2257	1							
X3	0.2536	0.1900	0.2376	0.2413	0.2550	0.2566	0.2266	0.1282	0.0862	0.1608	-0.1233	0.1920	0.3063	1						
X4	0.2548	0.0221	0.2996	0.1084	0.2515	0.1879	0.0556	0.1168	0.1063	0.1693	-0.0745	0.4448	0.5324	0.2433	1					
X5	0.4457	0.2632	0.2772	0.2994	0.3451	0.2807	0.3041	0.2468	0.3446	0.0203	-0.1334	0.4459	0.4683	0.2420	0.4498	1				
X6	0.1012	0.0912	0.0548	0.1082	0.1827	0.2183	0.1562	0.1162	0.1794	-0.0697	-0.0393	0.0510	0.4118	0.0995	0.1779	0.1238	1			
X7	-0.2066	-0.1064	-0.2057	-0.1197	-0.2430	-0.1653	-0.0515	-0.0436	-0.0956	-0.4602	0.2672	-0.4150	-0.2638	-0.2153	-0.3403	-0.1451	-0.1256	1		
X8	-0.0747	0.0088	-0.2051	0.0088	-0.2099	-0.1136	0.0241	-0.0116	-0.0301	-0.2812	0.2366	-0.2054	-0.2433	-0.0713	-0.2053	-0.0120	-0.1348	0.7037	1	
X9	-0.1325	-0.0410	-0.1557	-0.0226	-0.1870	-0.0818	-0.0457	-0.0099	-0.0663	-0.3649	0.2564	-0.2880	-0.1979	-0.1321	-0.2779	-0.0838	-0.1263	0.8613	0.6713	1

Appendix 8

Confirmatory factor analysis for the exogenous constructs

The figure represents the path diagram, including the variables measuring each exogenous construct.

Indicators:

(x1) Proportion of independent directors on the board
(X2) Size of the board
(X3) Board's compensations
(X4) Proportion of non-executive directors on the board
(X5) Board expertise
(X6) Monitoring and Control index

Indicators:

(X7) Significant participations
(X8) Main shareholder
(X9) Main five shareholders

Goodness-of-fit tests for CFA	
Normed Chi-squared	2,532
CFI (Comparative Fit Index)	0,916
RMSEA	0,107
Tucker-Lewis index (TLI)	0,883

Standardized estimation of the measurement model coefficients

	ξ1 Directors' and supervisors' structures	ξ2 Ownership structure	S.E.	R^2
(X1) INDEP	**0,510***** (4,948)		**0,148**	**0,26**
[a] (X2) BSIZE	**0,706** -----		**-----**	**0,499**
(X3) DIRCOMP	**0,399***** (3,952)		**0,142**	**0,159**
(X4) NONEXEC	**0,734***** (6,483)		**0,172**	**0,539**
(X5) CONTROLINDEX	**0,610**** (5,759)		**0,153**	**0,372**
(X6) EXPERTISE	**0,323***** (3,233)		**0,144**	**0,104**
(X7) SIGNIFICANT		**0,954**** (16,232)	**0,064**	**0,909**
(X8) MAINSHARE		**0,745***** (11,044)	**0,078**	**0,555**
[a] (X9) MAINFIVE		**0,915** -----	**-----**	**0,838**
Correlation	**-0,395***** (-3,455)			

*Significant at 0.05< p ≤ 0.10 ; **Significant at 0.01< p ≤ 0.05; ***Significant at p ≤ 0.01
a: fixed parameters, Test statistic below

Appendix 9

Standardized Residual Matrix

	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	Y11	X1	X2	X3	X4	X5	X6	X7	X8	X9
Y1	-0.0010																			
Y2	-0.0080	0.0000																		
Y3	0.0010	-0.0950	0.0000																	
Y4	-0.0090	0.1390	-0.0360	0.0000																
Y5	-0.0050	0.0510	0.0030	-0.0570	0.0020															
Y6	0.0040	0.0070	0.0070	-0.0120	0.0020	-0.0010														
Y7	0.0950	0.1040	-0.0200	0.0980	-0.0820	0.0610	0.0000													
Y8	-0.0010	0.0050	0.0570	-0.0610	-0.1060	-0.0260	0.0000	0.0000												
Y9	0.0060	-0.0500	0.1130	-0.0400	-0.0160	-0.0690	-0.0270	0.0020	0.0000											
Y10	-0.0150	0.0010	0.0070	0.1120	0.0630	-0.0670	-0.0900	-0.0510	-0.0070	0.0270										
Y11	-0.0130	0.0180	0.0310	-0.0720	0.0240	0.0760	0.0080	0.0970	0.0610	-0.0230	-0.0030									
X1	-0.0150	0.0140	0.0300	-0.0350	0.0340	-0.0250	-0.0820	0.0130	0.0400	0.1640	0.1280	0.0000								
X2	0.0140	0.0470	0.1040	0.0200	0.0780	0.0500	0.1690	0.0460	0.1030	-0.0810	-0.0130	-0.1590	0.0000							
X3	0.0440	0.0640	0.1100	0.1070	0.1280	0.0930	0.1340	-0.0040	-0.0320	0.0950	-0.0280	-0.0210	0.0170	0.0000						
X4	-0.1070	-0.1950	0.0790	-0.1230	0.0320	-0.0930	-0.1030	-0.1110	-0.0970	0.0560	0.0900	0.0790	0.0340	-0.0320	0.0000					
X5	-0.0650	-0.0090	-0.0460	0.0020	0.0820	0.0890	0.0830	0.0120	0.0860	-0.1220	0.0360	-0.1170	0.1830	-0.0270	-0.0400	0.0000				
X6	0.0960	0.0530	0.0640	0.0760	0.1330	0.0090	0.1500	0.0270	0.1480	-0.0900	0.0260	0.0920	-0.0140	-0.0240	-0.0090	-0.0870	0.0000			
X7	0.0190	0.0290	-0.0680	0.0250	-0.1060	0.0100	0.0410	0.0890	0.0230	-0.0310	-0.0100	-0.2020	0.0270	-0.0550	-0.0640	0.0010	0.1220	0.0000		
X8	0.0910	0.1080	-0.1040	0.1150	-0.1060	0.0150	0.0920	0.0860	0.0570	0.0340	0.0330	-0.0490	-0.0300	0.0460	-0.0030	-0.0420	0.1840	-0.0040	0.0000	
X9	0.0690	0.0800	-0.0330	0.1060	-0.0650	0.0750	0.0370	0.1080	0.0390	0.0180	0.0090	-0.0970	0.0620	0.0110	-0.0310	-0.0130	0.1550	-0.0010	0.0400	0.0000

Appendix 10

Final Structural Model

$$\begin{bmatrix}\eta_1\\ \eta_2\\ \eta_3\\ \eta_4\end{bmatrix} = \begin{bmatrix}0 & \beta_{1,2} & 0 & 0\\ 0 & 0 & 0 & 0\\ 0 & \beta_{3,2} & 0 & 0\\ \beta_{4,1} & 0 & 0 & 0\end{bmatrix} \times \begin{bmatrix}\eta_1\\ \eta_2\\ \eta_3\\ \eta_4\end{bmatrix} + \begin{bmatrix}\gamma_{1,1} & 0\\ \gamma_{2,1} & 0\\ 0 & \gamma_{3,2}\\ 0 & \gamma_{4,2}\end{bmatrix} \times \begin{bmatrix}\xi_1\\ \xi_2\end{bmatrix} + \begin{bmatrix}\zeta_1\\ \zeta_2\\ \zeta_3\\ \zeta_4\end{bmatrix}$$

$$\Phi = \begin{bmatrix}1 & \\ \phi_{2,1} & 1\end{bmatrix}$$

$$\Psi = \begin{bmatrix}1 & & & \\ 0 & 1 & & \\ 0 & 0 & 1 & \\ 0 & 0 & \psi_{4,3} & 1\end{bmatrix}$$