Intangibles and Italian IPO prospectuses: a disclosure analysis

Michela Cordazzo
Free University of Bozen-Bolzano, Bolzano, Italy

Abstract

Purpose – The purpose of the paper is to investigate intangibles disclosure in Italian initial public offerings (IPO) prospectuses. It seeks to examine whether intangibles disclosure in IPO prospectuses is correlated to some firm-specific variables, which influence the information selected by a company for its admission on the stock exchange.

Design/methodology/approach – The paper is an empirical analysis of intangibles disclosure in Italian IPO prospectuses, and in particular an analysis of its association with some firm-specific variables through a regression model.

Findings – The paper finds that intangibles information is increasing in Italian IPOs. Firm size and pre-IPO managerial ownership are associated with intangibles disclosure, while firm age and level of technology are not related.

Research limitations/implications – The paper shows that the IPO disclosure could not be exhaustive of the intangibles disclosure provided by Italian companies, because it is produced on a voluntary basis.

Originality/value – The empirical results indicate that intangibles disclosure is important in the capital markets assessment of firm value.

Keywords Intangible assets, Prospectuses, Capital markets, Italy

Paper type Research paper

Introduction

The globalisation of the economy, the spreading of internet and IT, and the increasing of innovation and knowledge skills within industries have modified the process of value creation in firms. These developments have changed the role of intangible resources, which have become a dominant factor in the growing competitiveness and strength of a firm. With the transition from the "tangible" economy – based on the production of tangible goods and investments in physical capital – to the "intangible economy", companies are more focused on measuring, managing, and developing their intangible resources.

This change has profound implications for accounting and financial reporting, but despite the transition to an intangibles-oriented economy, the traditional accounting system still measures only the value of financial and physical assets, and does not offer any solution for the valuation of intangible resources. The main problem is the lack of

The author gratefully acknowledges the helpful comments received on earlier drafts from Stefano Zambon, Lucie Courteau, and the anonymous reviewers. The author wishes also to thank Patrizia Maestri for data collection. The paper has benefited from presentation at the 1st EIASM Workshop on "Visualising, Measuring, and Managing Intangibles and Intellectual Capital" held at University of Ferrara (October 2005).

Journal of Intellectual Capital
Vol. 8 No. 2, 2007
pp. 288-305

1469-1930
DOI 10.1108/14691930710742853

adequate accounting techniques for measuring and reporting intangible assets. Some studies have highlighted the obsolescence of the traditional accounting systems in the recognition, valuation, and presentation of intangibles, stemming from the failure of conventional financial statements to provide most of the information that is relevant for valuing and representing intangibles to investors and decision makers (Amir and Lev, 1996; Lev and Sougiannis, 1996; Lev and Zarowin, 1999).

To overcome the deficiencies of traditional accounting systems, new business reporting models have been proposed for disclosing information about intangibles and for valuing them. It is well known that a number of companies, especially in Northern Europe (e.g. Skandia), have started to produce and often distribute a new document called "intellectual capital statement", where a large quantity of information on company intangibles is disclosed and commented upon. Such reports are different from the traditional financial statements in that they are not financially oriented and their common aim is to represent and, to some extent, measure the intangible resources of a firm. Through the intellectual capital statement, these companies have started to put forward a new reporting model in which financial statements and related performance indicators are presented in a radically changed context. Such a change has been made necessary by the transformation of business activity and by the central role-played by intangibles such as skills and knowledge in this transformation (Cordazzo, 2005).

The implications of such a rise of intangibles for traditional business and financial reporting systems have attracted the attention of several international and European institutions, accounting standard setters, academics, and government regulators (e.g. AIMR, 1993; OECD, 1999; DATI, 2001; FASB, 2001; AIAF, 2002, 2003; ICAEW, 2003; Zambon, 2003). The work of these groups have moved along two directions: first, an analysis of the differences between "new" economy and "old" economy, and second, the study of the inadequacy of traditional financial statements to represent the intangible value drivers in the knowledge economy. In particular, they have analysed whether the existing financial reporting system could be expanded in order to include qualitative statements and data relating to "human capital", "intellectual capital", "knowledge management", and "intangibles".

The incomplete treatment of intangible assets by the traditional accounting systems has also led to an insufficient level of publicly available information about these resources released to investors in financial markets. This could have generated an information asymmetry and a higher cost of capital especially for intangibles-intensive firms. It is intuitive indeed that in the marketplace less information is associated with more uncertainty, and this negative relation results in more risk and a higher compensation required by investors who take on the risk related to low disclosure levels. The implication is that companies could pay a lower cost of capital if they provided more information (Glosten and Milgrom, 1985; Amihud and Mendelson, 1986; Botosan, 1997; Sengupta, 1998).

In the light of such developments, the initial public offerings (IPO) prospectus seems to address more directly the role of intangibles as a basis of the competitive advantage of a firm. Indeed, this document contains more information on intangibles than the traditional financial reports (Bukh *et al.*, 2001b, 2002). The width of information contained in IPO prospectuses and the level of disclosure on intangibles make it similar to an intellectual capital statement. Indeed, both reports offer information on financial and non-financial aspects of the firm, such as its mission and strategy, its customer

satisfaction policies, human resources management, customer and supplier relationships, etc. In this sense, the IPO prospectus satisfies the demand by investors for a more comprehensive disclosure on the sources of future profits.

The fundamental purpose of this paper is to investigate intangibles disclosure in Italian IPO prospectuses. Following the results of previous studies (Bukh *et al.*, 2001a, b, 2002; Bukh, 2003), the paper aims to analyse the extent of intangibles disclosure by ranking companies with reference to two frameworks for content analysis proposed by Bukh *et al.* (2001b) and by the AIAF – Associazione Italiana Analisti Finanziari (Italian Association of Financial Analysts) (2002), respectively, as well as to verify whether the level of disclosure is correlated with some firm-specific variables, such as the firm's age and size, the structure of its ownership and the intensity with which it uses technology. The analysis is carried out on a sample of IPO prospectuses issued over the period 1999-2002 in Italy.

The importance of the topic is related to the spreading of intangibles in the current economy, and to the form and content of financial reports providing information for sound economic decision making. In particular, the relationship between disclosure on intangibles and IPOs is important because the firms to be listed have no history of financial results publicly available without restriction. Hence, the degree of disclosure in the IPO prospectus caters for the information needs of financial investors, which is particularly important also for capital markets to function efficiently.

The paper proceeds as follows. The next section presents the prior research on disclosure in the context of IPOs. The methodology is explained in Section 3, and the sample is described and results are reported in Section 4. Conclusions, limitations, and suggestions for future research are discussed in Section 5.

Prior research

The first listing of a company on a stock exchange implies the preparation of a prospectus in order to provide information and convince private and institutional investors that investing in the company will be profitable. The prospectus presents the growth prospects of the firm and its future financial capabilities by presenting financial and non-financial information useful for firm valuation by the capital market. The incorporation of additional information in the IPO prospectus allows a more accurate estimation of future earnings and company value. On the contrary, the information content of financial reports is less oriented to report on firm's growth prospects, and it offers a general overview of company performance.

Several studies compare the relevance of IPO prospectuses and financial statements. Mak (1994, 1996) points out that the level of disclosure on expected future profits is higher in IPO reports than in traditional financial reporting. Beattie (1999) suggests that IPO reports could be used as a model for financial reporting because of the width of information contained in prospectuses about the drivers of economic value creation. Mavrinac and Blitz (1998) investigate the financial and non-financial information provided by IPO reports and demonstrate the relevance of such reports to convey useful information for firm valuation.

There are few empirical works investigating the information provided by IPO prospectuses on intangibles. Bukh *et al.* (2001b) investigate the overlapping of IPO reports and intellectual capital statements. Furthermore, they analyse the disclosure on intangibles provided in Danish IPO prospectuses over a 12-year period. Their study

finds that the level of disclosure in IPO reports has increased in the period of analysis when compared with the information offered by intellectual capital reports. In addition, they find a higher level of disclosure in IPO reports of firms operating in intangibles-intensive industries such as IT, biotech and pharmaceutical industries, than in those of firms from the manufacturing, wholesale and service industries. Bukh *et al.* (2002) extend the previous research by investigating the information on intangibles provided by Danish and Spanish IPO firms, in order to analyse and compare the level of disclosure in the two countries. Despite the expectation for greater disclosure in Danish reports, the results show that the level of disclosure in the two countries is not significantly different.

The previous empirical literature on intangibles disclosure in IPO prospectuses finds:

- A high level of disclosure on intangibles.
- A similarity with disclosure in intellectual capital statements.
- The relevance of this disclosure for capital markets.

On the other hand, it does not seem that this interest is moving from the theoretical level into the concrete recognition of key intangibles in the analysis of investments, financial statements, and corporate value creation. Despite the results of several studies highlighting the deficiencies in company reporting as a result of the mistreatment of intangibles and the negative implications of such deficiencies, the progress in this area has been limited. Furthermore, investors and analysts do not give a clear signal about their information needs. They ask for information linked to intangibles such as customers relations, management skills, or research and development investments, which are not included in financial statements, but such a demand of information results in a wide production of intellectual capital indicators and is not systematically relating to managerial and decision-making purposes (Lev and Zambon, 2003).

Bukh (2003) underlines that such a paradox – on the one hand the irrelevance of intangibles and more in general of intellectual capital for managerial and decision-making purposes, and on the other hand the similarities of IPO prospectuses and intellectual capital statements which evidence the relevance of intangibles information for capital markets – could be encompassed whether the intellectual capital emerging practice would be less focused on intellectual capital indicators and would offer a business model for intangibles-intensive firms.

Methodology

Collection of information

The intangibles information has been collected from Italian IPO prospectuses using the frameworks for content analysis proposed respectively by Bukh *et al.* (2001b) and the AIAF (2002). Such frameworks consist of a predefined list of possible indicators.

The Bukh framework is composed of a list of 78 indicators classified into six subject areas:

(1) Human resources.

(2) Customers.

(3) IT.

(4) Processes.

(5) Research and development.
(6) Strategy.

The indicators have been chosen based on the previous corporate disclosure literature and on the Danish Agency for Trade Industry (DATI) research project on intellectual capital statements in 2001. The research project has produced a set of guidelines for the preparation of intellectual capital statements for external publication. The main aim of the initiative was to help Danish companies in the transition from an industry-based to a knowledge-based economy. These guidelines were elaborated by incorporating the individual experiences of the companies included in the study. They do not offer directives for the preparation of intellectual capital statements, but they suggest to the users of such statements some information about the principles on which they are based.

The AIAF framework identifies five dimensions of disclosure and establishes a list of 80 indicators. The dimensions are:

(1) Strategy.
(2) Customers and markets.
(3) Human resources.
(4) Organisation.
(5) Process and innovation.

These dimensions do not represent the ideal components of intellectual capital, such as suggested in the models proposed by Petrash (1996), Sveiby (1997) or Edvinsson and Malone (1997), but they try to address the requirements of a practitioner assessing the quality and quantity of intangibles disclosure. The dimension relating to strategy focuses on a wide definition of intangibles and on the identification of value drivers. The relationship with customers is measured by the customers and markets dimension, while the characteristics and performance of employees are described by the human resources dimension. The organisation dimension describes the organisational structure and the relationships between the firm and its suppliers, and the dimension of process and innovation contains information on innovation relating to internal processes.

The two frameworks are quite similar and contain both qualitative and quantitative indicators in each subject area or dimension. The frameworks can be applied to different sectors, even though it is normal that the information on certain dimensions may not be relevant or applicable for certain companies. For example, the dimension of customer and markets is important to a telecommunication company, but less significant for a pharmaceutical firm focusing on the development of new drugs. On the other hand, the list of indicators is intended to cover as completely as possible the intangible resources available to a company.

Some items have been added to the two original frameworks for the purpose of this study. The new indicators relating to human resources describe the role of trade unions organisations within the firms, while the number of employees by country has been added because it was present in all the IPOs analysed. The dimension of customers has been added to by considering information about competitors (production of similar goods, opinion of customers, new products), and contracts (between the firm and its customers). Information on marks has been included in the subject area of research and

development, while indicators about sector analysis, financial ratio analysis, suppliers and financial control, future plans, and strategies have been added to the strategy dimension. The final framework includes a total number of 87 indicators, which are classified in six dimensions as follows:

(1) Human resources.
(2) Customers.
(3) Information technology.
(4) Processes.
(5) R&D.
(6) Strategy.

Disclosure score indexes

In an attempt to measure the extent of intangibles disclosure provided in IPO prospectuses, a disclosure score index (DSI) and a qualitative-quantitative disclosure score index (QL-QT DSI) are computed. These indexes relate the number of indicators that an IPO prospectus contains to the total number of indicators given by the framework for collection of intangibles information.

The disclosure score index (DSI) is computed as follows:

$$\mathrm{DSI_j} = \sum_{i=1}^{m_j} \frac{d_{ij}}{N}$$

This index measures the level of disclosure on intangibles for a company j, where $N = 87$ is the total number of indicators in the framework; d_{ij} is equal to 1 if indicator i is disclosed, and 0 otherwise; and m_j is the number of indicators disclosed by company j (see Cooke, 1989; Raffounier, 1995; Cordazzo, 2005). When $\mathrm{DSI_j}$ is equal to 0, it indicates that company j's prospectus contains no information about any of the framework's indicators on intangibles. The division of the level of disclosure by the total number of indicators N allows the comparison between companies.

In order to take into account the nature of indicators, the qualitative-quantitative disclosure score index (QL-QT DSI) is computed as follows:

$$\mathrm{QL-QTDSIj} = \sum_{i=1}^{m_j} \frac{d_{ij} * p_{ij}}{N}$$

The difference with the previous version of DSI consists in the weights p_{ij}, which equal 1 when the information provided about indicator d_{ij} is qualitative, 2 when it is quantitative, and 3 when it is both qualitative and quantitative. The adoption of a weighted index is an attempt to examine whether qualitative and quantitative disclosures have a different effect on the extent of intangibles information and on its association with firm-specific variables. The weight given to quantitative information is higher than that of qualitative information, because previous studies have shown a stronger reaction of capital markets and investor decision-making to quantitative than to narrative announcements (e.g. Botosan, 1997; Milne and Chan, 1999; Lev, 2000).

A disclosure score index that attributes a different weight to each of the six-dimension has not been examined because not all dimensions are relevant to all

companies. For example, the dimension related to R&D is more significant for pharmaceutical companies, but less important for manufacturing firms. Hence it would be impossible to establish a set of weights common to all companies.

Firm-specific variables

The research examines whether the level of intangibles disclosure in IPO prospectuses is correlated with some firm-specific variables which affect the information selected by a company before its admission to a stock exchange, by considering the effect of the firm's size, age, pre-IPO managerial ownership, and level of technology on DSI (QL-QT DSI).

In this study firm size is measured by total sales, which is preferred to the number of employees, because the small number of employees in some sectors (such as IT companies) as compared to traditional sectors would probably have biased the analysis. The previous literature on voluntary disclosure finds a positive association between firm size and voluntary disclosure. Anton (1954), Stanga (1976), and Ahmed and Courtis (1999) demonstrate this positive relationship, but their results highlight that small companies show less benefits than large companies from providing information to their stakeholders, because the costs of providing information are higher than the benefits of an increased disclosure. This leads to the first hypothesis:

H1. Total sales have a positive association with DSI (QL-QT DSI).

The level of disclosure is expected to be negatively associated with firm age, which is considered as a proxy for risk. The companies that are more established in business are less risky, and their level of disclosure is connected to the number of years in business. Jaggi (1997) shows that the level of accuracy of forecasted information disclosed in IPO prospectuses is influenced by the number of years that a company is in business, older companies having more accurate forecasts than younger firms. This leads to the second hypothesis:

H2. Firm age has a negative association with DSI (QL-QT DSI).

The pre-IPO managerial ownership is measured as the percentage of the company's shares owned by management. The ownership structure is expected to influence disclosure practices. Forker (1992), Chen and Jaggi (1998), Ho and Wong (2001) find a positive association between the non-executive directors and the extent of voluntary disclosure, because these directors are perceived as a mechanism for monitoring management's behaviour, resulting in more voluntary disclosure of corporate information. O'Sullivan (2000) finds more extensive audits associated with higher managerial ownership in order to monitor the role of managers. This leads to the third hypothesis:

H3. Pre-IPO managerial ownership has a positive association with DSI (QL-QT DSI).

The sample firms have been divided according to their business activity: the high-technology group includes pharmaceutical and research, IT and technology companies, while the low-technology firms belong to the merchandising, services, and manufacturing sectors. The expectation is that high-technology companies disclose more information than low-technology firms because their assets include higher levels

of intangibles, such as research and development, patents, etc. (Amir and Lev, 1996). This leads to the fourth hypothesis:

H4. Technology level has a positive association with DSI (QL-QT DSI).

Given the positive association between the level of technology and intangibles disclosure, the expectation is to find also higher levels of disclosure in firms which are listed on the high-technology segment of the Italian stock market (i.e. Nuovo Mercato, cf. Section 4.1.). This leads to the fifth hypothesis:

H5. Listing on the Nuovo Mercato has a positive association with DSI (QL-QT DSI).

IPO intangibles disclosure regression model

The following regression model is estimated to test the relation of total sales, firm age, pre-IPO managerial ownership, level of technology and high-technology segment listing with DSI (QL-QT DSI):

$$\begin{aligned}\log(DSI/QL-QTDSI) = {} & \alpha_0 + \alpha_1 \log(\text{total sales}) + \alpha_2 \log(\text{firm age}) + \\ & \alpha_3(\text{pre} - \text{IPO managerial ownership}) + \alpha_4 \text{DTECH} + \\ & \alpha_5 \text{DSG} + \sum_{t=1999}^{2001} \alpha_6 D_t + \in\end{aligned}$$

where D_{TECH} is equal to 1 for firms which are classified in the high-technology sub-sample and 0 otherwise; and D_{SG} is equal to 1 for companies listed on the Nuovo Mercato and 0 otherwise. The dummy variables D_t, $t = 1999, \ldots, 2001$ are year indicators. The natural logarithm of DSI (QL-QT DSI), total sales, and firm age are used to control for heteroscedasticity.

Sample and results

Sample

The sample consists of all IPOs from Nuovo Mercato and Borsa Italiana listings in the period 1999-2002. Nuovo Mercato and Borsa Italiana are the two main listing segments on the Italian stock exchange: the first is the segment for young small and mid-capitalization companies operating in innovative high-tech sectors or in traditional sectors with an innovative approach to products and processes and with significant growth, while the second segment is dedicated to older traditional sectors with a positive track record of financial results.

The sample includes 86 prospectuses, 40 from IPOs in Nuovo Mercato between 1999 and 2001 (there were no IPO in 2002) and 46 from IPOs in Borsa Italiana between 1999 and 2002. The financial and insurance sectors have been excluded because their financial documents are subjects to specific disclosure requirements and their inclusion would have biased the results. Of the remaining IPOs, Ducati Motor Holding and BB Biotech has been excluded. The first has been dropped because its IPO has been made simultaneously in Italy and in the US, and its prospectus has been prepared according to Form F-1, as required by Securities and Exchange Commission (e.g. Ordelheide and

KPMG, 1995). BB Biotech has been excluded because it is Swiss, and the information content of its prospectus is different.

The high-technology companies represent 38 percent of the total sample. The highest percentage is in Nuovo Mercato (80 percent), while it is only 2 percent in the Borsa Italiana subsample.

Results

Descriptive statistics. The analysis of intangibles disclosure in IPOs helps to understand the relevance of intangibles for capital markets. The market's assessment of a company's value and its admission for listing on a stock exchange are based also on non-financial information, which describes the resources available for the firm's potential growth and future prospects. Tables I and II show that the level of intangibles disclosure has been increasing in both listing segments over the period 1999-2002, which is consistent with the findings of previous studies (Bukh *et al.*, 2001a, b; Mavrinac and Siesfeld, 1997; Mavrinac and Blitz, 1998).

Table I presents the descriptive statistics of the two disclosure indexes and the firm-specific variables, by year and by listing segment. In order to test the difference in the level of intangibles disclosure between the two listing segments, the means (medians) of the disclosure indexes are compared using a one-tailed two-sample *t*-test (two-tailed Mann-Whitney test). The expectation is that companies in Nuovo Mercato provide more information on intangibles than those in Borsa Italiana, because the former segment is characterized by a large number of high-technology companies. The difference is significant only in 2000.

With respect to total sales, firm age, and pre-IPO managerial ownership, firms listed in Nuovo Mercato are smaller and younger than those listed in Borsa Italiana, and their pre-IPO managerial ownership is lower. It is also important to note that a large number of companies (57 percent) in both segments have a pre-IPO managerial ownership equal to 0 percent, because there is the prevalence of family members and a dominant chief executive officer as board chairman in their corporate governance structure. The difference in the means (medians) between the two segments are not always significant.

In Table II, the DSI (QL-QT DSI) is on average 0.334 (0.480) in Nuovo Mercato (Panel A) and 0.335 (0.496) in Borsa Italiana (Panel B). The difference between the two segments is more evident when considering the QL-QT DSI, which suggests that there is more quantitative information disclosed in Borsa Italiana than in Nuovo Mercato IPOs.

The results of Table II show that on average firms provide the same level of disclosure on each dimension in both listing segments. The dimensions relating to strategy (0.105 and 0.146 in Nuovo Mercato, 0.099 and 0.161 in Borsa Italiana for DSI and QL-QT DSI, respectively) and human resources (0.069 and 0.110 in Nuovo Mercato, 0.069 and 0.103 in Borsa Italiana) are generally the most important, followed by customers, research and development, IT, and processes. The prevalence of strategy information has also been documented by some studies investigating the main factors affecting voluntary disclosure in annual reports of European companies (e.g. Meek *et al.*, 1995). Bukh *et al.* (2001b), AIAF (2002), Bergamini and Zambon (2002), and Cordazzo (2005) find similar results.

	1999			2000			2001			2002		
	Mean	Median	SD	Mean	Median	SD	Mean	Median	SD	Mean	Median	SD
Panel A: Nuovo Mercato												
DSI	0.301	0.293	0.537	0.340**	0.333***	0.598	0.361	0.379	0.111			
QL-QT DSI	0.439	0.402	0.846	0.480	0.483	0.958	0.522	0.517	0.150			
Total sales (in million €)	68.172	28.146*	93.174	48.108***	23.860**	75.510	220.423	103.962	285.865			
Firm age	13.00**	10.50**	9.01	15.17**	15.00*	8.96	21.40**	24.00	11.50			
Pre-IPO managerial ownership	0.014	0.001	0.031	0.006	0.000	0.119	0.051	0.003	0.095			
Panel B: Borsa Italiana												
DSI	0.270	0.264	0.080	0.306	0.287	0.047	0.372	0.368	0.067	0.391	0.402	0.084
QL-QT DSI	0.383	0.379	0.121	0.460	0.460	0.086	0.569	0.563	0.091	0.571	0.586	0.135
Total sales (in million €)	907.242	104.324	2620.127	191.910	106.390	268.361	414.125	226.208	503.586	396.964	259.000	382.061
Firm age	27.47	25.00	14.25	38.64	28.00	28.26	46.46	33.00	37.08	34.71	18.00	37.18
Pre-IPO managerial ownership	0.110	0.000	0.241	0.120	0.000	0.283	0.015	0.000	0.028	0.000	0.000	0.000

Notes: *, **, ***: Nuovo Mercato vs Borsa Italiana differences on mean (one-tailed two-sample t-test) and median (two-tailed Mann-Whitney test) significant at the 1, 5 and 10 percent levels, respectively

Table I.
Descriptive statistics

	Nuovo Mercato				Borsa Italiana				
	1999	2000	2001	1999-2001	1999	2000	2001	2002	1999-2002
Panel A: Disclosure score index (DSI)									
Dimensions									
A) human resources	0.057	0.072	0.078	0.069	0.059	0.067	0.077	0.072	0.069
B) customers	0.048	0.059	0.064	0.057	0.042	0.052	0.058	0.067	0.055
C) information technology	0.042	0.040	0.032	0.038	0.032	0.023	0.042	0.033	0.033
D) processes	0.023	0.024	0.030	0.026	0.015	0.028	0.033	0.036	0.028
E) R&D	0.034	0.039	0.044	0.039	0.036	0.037	0.054	0.051	0.045
F) strategy	0.096	0.106	0.113	0.105	0.058	0.100	0.108	0.131	0.099
TOTAL (DSI)	0.301	0.340	0.361	0.334	0.270	0.306	0.372	0.391	0.335
Panel B: Qualitative-quantitative disclosure score index (QL-QT DSI)									
Dimensions									
A) human resources	0.092	0.101	0.129	0.110	0.089	0.109	0.110	0.105	0.103
B) customers	0.078	0.098	0.110	0.095	0.067	0.088	0.099	0.116	0.093
C) information technology	0.061	0.053	0.039	0.051	0.042	0.027	0.058	0.046	0.043
D) processes	0.023	0.027	0.030	0.027	0.018	0.030	0.036	0.037	0.030
E) R&D	0.042	0.051	0.067	0.053	0.049	0.052	0.088	0.075	0.066
F) strategy	0.143	0.142	0.154	0.146	0.123	0.154	0.177	0.191	0.161
TOTAL (QL-QT DSI)	0.439	0.480	0.522	0.480	0.383	0.460	0.569	0.571	0.496

Table II.
Content analysis of IPO intangibles disclosure by dimension and listing segment

The high-technology group, with DSI (QL-QT DSI) of 0.344 (0.488), provides more information on intangibles than the low-technology group (DSI and QL-QT DSI of 0.306 and 0.448, respectively) in Nuovo Mercato. Such a difference is less important in Borsa Italiana, where intangibles disclosure of the first group (0.322 and 0.460 for DSI and QL-QT DSI, respectively) is quite similar to that of the second (0.314 and 0.467). We can also observe that the high-technology group provides more intangibles information in Nuovo Mercato than in Borsa Italiana. The opposite behaviour can be observed in the low-technology category.

Regression results. The adjusted R^2 in Table III show that the firm-specific variables included in the model explain 24.80 and 30.50 percent of the variation in DSI and QL-QT DSI, respectively.

The only variable that has significant explanatory power for both disclosure score indexes is total sales, a proxy for firm size. Its sign is positive as predicted and highly significant. This result is consistent with those of previous studies (Jaggi, 1997; Ahmed and Courtis, 1999; Kim and Ritter, 1999).

With reference to the influence of firm age on intangibles disclosure in IPOs, the analysis shows a negative association as predicted, but non-significant. An explanation could be that most of the sample firms are young and small, and the increasing disclosure (on intangibles) generates higher costs and higher valuation risk in capital markets for them than for older companies. Moreover, when preparing their IPO prospectus companies follow the recommendations of their underwriters, who have a lot of experience with the information required by capital markets. These requirements may depend less on firm age than on other factors. Jaggi (1997) finds a similar behaviour.

The signs on pre-IPO managerial ownership and level of technology are positive as predicted, but significant only for managerial ownership in the DSI equation. The

IPO intangibles disclosure regression model:
$\log(DSI/QL\text{-}QT\ DSI) = \alpha_0 + \alpha_1 \log(total\ sales) + \alpha_2 \log(firm\ age) + \alpha_3 (pre\text{-}IPO\ managerial\ ownership) + \alpha_4 D_{TECH} + \alpha_5 D_{SG} + \sum_{t=1999}^{2001} \alpha_6 D_t + \varepsilon$

Dependent variables (expected sign)	Coefficient	SD	*t*-statistic	*P*-value
Panel A: Independent variable – Disclosure score index (DSI)				
Intercept	2.8196	0.2107	13.3842	0.0000
Log (total sales) (+)	0.0394	0.0162	2.4296	0.0176
Log (firm age) (–)	−0.0202	0.0346	−0.5838	0.5612
Pre-IPO managerial ownership (+)	0.0032	0.0016	2.0337	0.0457
D_{TECH} (+)	0.0528	0.0838	0.6305	0.5304
D_{SG} (+)	0.0986	0.0903	1.0916	0.2787
$N = 79$				
Adj $R^2 = 0.248$				
$F = 4.6657$				
P-value (*F*-statistic) = 0.0002				
Panel B: Independent variable – Qualitative-quantitative disclosure score index (QL-QT DSI)				
Intercept	3.0139	0.2065	14.5967	0.0000
Log (total sales) (+)	0.0565	0.0159	3.5548	0.0007
Log (firm age) (–)	−0.0255	0.0339	−0.7513	0.4550
Pre-IPO managerial ownership (+)	0.0016	0.0015	1.0416	0.3011
D_{TECH} (+)	0.0243	0.0821	0.2953	0.7686
D_{SG} (+)	0.1007	0.0885	1.1380	0.2589
$N = 79$				
Adj $R^2 = 0.305$				
$F = 5.8948$				
P-value (*F*-statistic) = 0.00002				

Table III.
Regression results

partial influence of the pre-IPO managerial ownership could be explained by the fact that for a large number of companies top managers do not own any of their firm's shares. This result is consistent with that of Ho and Wong (2001) who find a positive and non-significant relationship between managerial ownership and voluntary disclosure. With reference to the relationship between the level of technology and intangibles disclosure, the high-technology group seems to provide more information on intangibles than low-technology companies in both listing segments, but this difference does not significantly affect neither DSI nor QL-QT DSI.

Finally, the coefficients on the dummy variable relating to the listing in Nuovo Mercato or Borsa Italiana is positive as expected but not significant. The intangibles disclosure provided by firms listed in the two segments is quite similar (see Tables IV and V), which could explain the lack of a significant relationship with the disclosure indexes DSI (QL-QT DSI).

Conclusion

The study has investigated the level of intangibles disclosure in Italian IPO prospectuses and the firm-specific characteristics, which affect it.

The results show that the amount of information on intangibles provided by IPO prospectuses has increased over the sample period of 1999-2002, which seems to suggest that managers believe this information important in the valuation of their firms by capital markets. The intangibles information contributes to the reduction

NUOVO MERCATO		BORSA Italiana	
Companies	Sectors	Companies	Sectors
1999			
Finmatica	IT and technology	Acea	Trade and services
Gandalf	Trade and services	Acsm Como	Trade and services
Opengate	IT and technology	Basic Net	Production
Poligrafica S. Faustino	Production	Enel	Trade and services
Tecno Diffusione	Trade and services	Filatura Pollone	Production
Tiscali	IT and technology	Grandi navi veloci	Trade and services
		Gruppo Coin	Trade and services
		Italdesign	Production
		Marcolin	Production
		Mirato	Production
		Olidata	IT and technology
		Permasteelisa	Production
		Roncadin	Production
		Trevi Finanziaria	Production
		Vemer	Production
2000			
AiSoftware	IT and technology	Aem Torino	Trade and services
Art'è	Trade and services	Aeroporto Firenze	Trade and services
Biosearch Italia	Pharmaceutical	AS Roma	Trade and services
Cad it	IT and technology	Burani Fashion Group	Production
Cairo Communication	Trade and services	Caltagirone Editore	Production
Cdc	IT and technology	Centrale Latte Torino	Production
Chl	IT and technology	Ferretti	Production
Cto	IT and technology	Lavorwash	Production
Dada	IT and technology	Luxottica Group	Production
Data Service	IT and technology	Saeco International Group	Production
Datamat	IT and technology	Tod's	Production
Digital Bros	IT and technology		
Dmail.it	IT and technology		
E.Biscom	IT and technology		
El. en.	IT and technology		
Engeneering.	IT and technology		
e-Planet	IT and technology		
Euphon	Production		
Fidia	IT and technology		
Freedomland Itn	IT and technology		
I.Net	IT and technology		
Inferentia	Trade and services		
Mondo Tv	Production		
Novuspharma	Pharmaceutical		
Reply	IT and technology		
Tas	IT and technology		
Tc Sistema	IT and technology		
Txt	IT and technology		
Vitaminic	IT and technology		

Table IV.
List of sampled firms

(*continued*)

NUOVO MERCATO		BORSA Italiana	
Companies	Sectors	Companies	Sectors
2001			
Algol	IT and technology	Acegas	Trade and services
Datalogic	IT and technology	Air Dolomiti	Trade and services
Esprinet	IT and technology	Amplifon	Trade and services
It Way	IT and technology	Biesse	Production
Pcu Italia	IT and technology	Davide Campari	Production
		De' Longhi	Production
		Giacomelli Sport Group	Trade and services
		Graniti Fiandre	Production
		Juventus Football Club	Trade and services
		Lottomatica	Trade and services
		Negri Bossi	Production
		Snam Rete Gas	Trade and services
		Viaggi del Ventaglio	Trade and services
2002			
		Asm Brescia	Trade and services
		Astaldi	Production
		Fiera Milano	Trade and services
		Hera	Trade and services
		Meta	Trade and services
		Pirelli & Co Real Estate	Trade and services
		Socotherm	Production

Table IV.

information asymmetry, and hence to a reduction of the risk associated with investor decision-making, and a more accurate valuation of firms entering the stock market. This could support the "pioneers of intangibles movement" documenting that intangibles which are not disclosed in traditional financial statements or annual reports represent a large portion of the difference between market and book values of equity, as well as the fundamental role of intangibles in conveying relevant information to investors (Lev, 2002). Moreover, it is important to note that IPO prospectuses and financial statements have different purposes and meet the information needs of different users. The IPO prospectus offers additional information on the firm's long-term strategy, company risk and future profitability, and it is generally more forward-oriented than annual reports.

The results show that firm size and pre-IPO managerial ownership are determinants of the level of intangibles disclosure in IPOs, while firm age and level of technology are not significantly associated with it. The admission to a listing segment oriented more towards high-technology does not seem to influence the level of disclosure on intangibles. These findings are consistent with previous literature on voluntary disclosure and on intangibles information in IPOs but they require further investigation.

A further development of the study would be the comparison between the IPO prospectuses and intellectual capital statements in Italy. But this comparison faces some difficulties, first in the sample selection due to the low number of companies producing an intellectual capital statement, and second in the content of such

Indicators	Indicators
A) Dimension of human resources	*C) Dimension of information technology*
1. Staff breakdown by age	46. IT investments
2. Seniority	47. IT systems
3. Staff breakdown by sex	48. Software
4. Nationality	49. IT benefits
5. Staff breakdown by department	50. IT costs
6. Staff breakdown by functions	
7. Education	*D) Dimension of processes*
8. Employees' turnover	51. Internal communication system
9. Comments on turnover	52. Working environment system
10. Employees' health and work safety	53. Online working
11. Work absences	54. Internal information and knowledge
12. Interviews	55. External information and knowledge
13. Development of competencies	56. Measurement of internal and external risk
14. Programs and plans on competencies	57. Social programs and plans
15. Training costs	58. Environmental programs, plans and certification
16. Employees' training costs	
17. Employees' general costs	*E) Dimension of R&D*
18. Recruitment programs	59. R&D plans, programs, strategies
19. HRM departments and functions	60. R&D costs
20. Working shifts	61. R&D costs on sales
21. Carriers	62. First stage of R&D
22. Organisational incentives and bonus	63. Development stage of R&D
23. Pensions plan	64. R&D prospects
24. Insurance	65. Patents
25. Description of key employees	66. Numbers of patents and licenses
26. Revenues on employees	67. Outstanding patents
27. Value added on employees	68. Marks
28. Trade unions organisations	
29. Number of employees by country	*F) Dimension of strategy*
	69. Description of the new production technology
B) Dimension of customers	70. Quality of firm performance
30. Number of customers	71. Strategic alliances
31. Sales by customers	72. Objectives and reasons of strategic alliances
32. Sales by products	73. Comments on the consequences of strategic alliances
33. Customers' geographical breakdown	74. Supply and distribution system
34. Description of key clients	75. Firm image and mark
35. Description of customers participation	76. Firm culture
36. Description of relationship with customers	77. Best practices
37. Customers' education/ training	78. Organisational structure
38. Customers on employees	79. Use of energy, raw materials, and other goods
39. Value added on customers	80. Environmental investments
40. Products breakdown	81. Community participation
41. Products breakdown on customers	82. Social responsibility
42. Products breakdown by country	83. Employees' contracts
43. Buying backs	84. Sector analysis
44. Competitors	85. Financial ratios analysis
45. Contacts	86. Suppliers and financial control
	87. Future plans and strategies

Table V.
Framework for the collection of intangibles information

statements due to the diversity and context specificity hinder the production of such a report. Although the few Italian examples of intellectual capital statements show a theoretical shared approach to the intellectual capital statement, there are relevant differences across the models developed by firms, which make such models too firms specific and not comparable.

References

AIAF (2002), *The Communication of Intangibles and Intellectual Capital: An Empirical Model of Analysis*, Official Report No. 106, Associazione Italiana Analisti Finanziari (Italian Association of Financial Analysts), Milan.

AIAF (2003), *Intangibles: Metodi di Misurazione e Valorizzazione (Intangibles: Measurement and Valuation Methods)*, Official Report No. 113, Associazione Italiana Analisti Finanziari (Italian Association of Financial Analysts), Milan.

AIMR (1993), *Financial Reporting in the 1990s and Beyond*, Association for Investment Management and Research, Charlottesville, VA.

Ahmed, K. and Courtis, J.K. (1999), "Associations between corporate characteristics and disclosure levels in annual reports: a meta analysis", *British Accounting Review*, Vol. 31, pp. 35-61.

Amihud, Y. and Mendelson, H. (1986), "Asset pricing and the bid-ask spread", *Journal of Financial Economics*, Vol. 17, pp. 223-49.

Amir, E. and Lev, B. (1996), "Value-relevance of non-financial information: the wireless communications industry", *Journal of Accounting and Economics*, Vol. 22, pp. 3-30.

Anton, H.R. (1954), "Funds statements practices in the United States and Canada", *The Accounting Review*, Vol. 29 No. 4, pp. 620-7.

Beattie, V. (1999), *Business Reporting: The Inevitable Change*, ICAEW, London.

Bergamini, I. and Zambon, S. (2002), "A scoring methodology for ranking company disclosure on intangibles", working paper presented at the Conference The Transparent Enterprise. The Value of Intangibles, organised by the Autonomous University of Madrid and Ministry of Economy, Madrid, 25-26 November.

Botosan, C.A. (1997), "Disclosure level and the cost of equity capital", *The Accounting Review*, Vol. 72 No. 3, pp. 323-50.

Bukh, P.N.D. (2003), "The relevance of intellectual capital disclosure: a paradox?", *Accounting, Auditing & Accountability Journal*, Vol. 16 No. 1, pp. 49-56.

Bukh, P.N.D., Larsen, H.T. and Mouritsen, J. (2001a), "Constructing intellectual statements", *Scandinavian Journal of Management*, Vol. 17 No. 1, pp. 87-108.

Bukh, P.N.D., Larsen, H.T., Gormsen, P. and Mouritsen, J. (2001b), "Disclosure of intellectual capital indicators in Danish IPO prospectus", working paper, The Aarhus School of Business, Aarhus.

Bukh, P.N., Johansen, M.R., Meca, E.G. and Mouritsen, J. (2002), "IPO prospectuses as intellectual capital reports: a comparison of Danish and Spanish reporting practices", working paper presented at XXV Annual Congress of European Accounting and Association, Copenhagen, 25-27 April.

Chen, J.P.C. and Jaggi, B.L. (1998), "The association between independent non executive directors, family control and financial disclosures", *Journal of Accounting and Public Policy*, Vol. 19, pp. 285-310.

Cooke, T. (1989), "Disclosure in the corporate annual reports of Swedish companies", *Accounting and Business Research*, Vol. 74, pp. 113-24.

Cordazzo, M. (2005), "The value relevance of the disclosure on intangibles: a European and comparative study", working paper presented at the Annual Congress of American Accounting Association, San Francisco, CA, 7-10 August.

Cordazzo, M. (2005), "IC statements vs environmental and social reports: an empirical analysis of their convergences in the Italian context", *Journal of Intellectual Capital*, Vol. 6 No. 3, pp. 441-64.

DATI (2001), *A Guideline for Intellectual Capital Report: A Key to Knowledge Management*, Danish Agency for Trading Industry, Copenhagen.

Edvinsson, L. and Malone, M.S. (1997), *Intellectual Capital: Realising Your Company's True Value by Findings its Hidden Brainpower*, HarperCollins Publishers, New York, NY.

FASB (2001), *Improving Business Reporting: Insights into Enhancing Voluntary Disclosure*, FASB, Norwalk, CT.

Forker, J.J. (1992), "Corporate governance and disclosure quality", *Accounting and Business Research*, Vol. 22 No. 86, pp. 111-24.

Glosten, L. and Milgrom, P. (1985), "Bid, ask, and transaction prices in a specialist market with heterogeneously informed traders", *Journal of Financial Economics*, Vol. 14, pp. 71-100.

Ho, S.S.M. and Wong, K.S. (2001), "A study of the relationship between corporate governance structures and the extent of voluntary disclosure", *Journal of International Accounting, Auditing and Taxation*, Vol. 10, pp. 139-56.

ICAEW (2003), *Information for Better Markets: New Reporting Models for Business*, ICAEW, London.

Jaggi, B. (1997), "Accuracy of forecast information disclosed in the IPO prospectuses of Hong Kong companies", *The International Journal of Accounting*, Vol. 32 No. 3, pp. 301-19.

Kim, M. and Ritter, J.R. (1999), "Valuing IPOs", *Journal of Financial Economics*, Vol. 53, pp. 409-37.

Lev, B. (2000), *Communicating Knowledge Capabilities*, Stern School of Business, New York, NY, working paper.

Lev, B. (2002), "Rethinking accounting. Intangibles at a crossroads: what's next?", *Financial Executive*, March/April, pp. 34-9.

Lev, B. and Sougiannis, T. (1996), "The capitalization, amortization, and value-relevance of R&D", *Journal of Accounting and Economics*, Vol. 21, pp. 107-38.

Lev, B. and Zambon, S. (2003), "Intangibles and intellectual capital: an introduction to a special issue", *The European Accounting Review*, Vol. 12 No. 4, pp. 597-603.

Lev, B. and Zarowin, P. (1999), "The boundaries of financial reporting and how to extend them", *Journal of Accounting Research*, Vol. 37 No. 2, pp. 353-85.

Mak, Y.T. (1994), "The voluntary review of earnings forecast disclosed in IPO prospectuses", *Journal of Accounting and Public Policy*, Vol. 13 No. 2, pp. 141-58.

Mak, Y.T. (1996), "Forecast disclosure by initial public offering firms in a low-litigation environment", *Journal of Accounting and Public Policy*, Vol. 15, pp. 111-36.

Mavrinac, S. and Blitz, A. (1998), "Managing the success of the IPO transformation process", working paper, Ernst and Young, London.

Mavrinac, S. and Siesfeld, T. (1997), "Measures that matter: an exploratory investigation of investors' information needs and value priorities", working paper, Richard Ivey School of Business, London.

Meek, G.K., Roberts, C.B. and Gray, S.J. (1995), "Factors influencing voluntary annual report disclosures by US, UK and Continental European multinational corporations", *Journal of International Business Studies*, Vol. 3, pp. 555-72.

Milne, M.J. and Chan, C. (1999), "Narrative corporate social disclosures: how much of a difference do they make to investment decision-making", *British Accounting Review*, Vol. 31, pp. 439-57.

O'Sullivan, N. (2000), "The impact of board composition and ownership on audit quality: evidence from large UK company", *British Accounting Review*, Vol. 32, pp. 397-414.

OECD (1999), *Symposium on Measuring and Reporting Intellectual Capital: Experience, Issues, and Prospects*, OECD, Paris.

Ordelheide, D. and KPMG (1995), *Transnational Accounting*, Macmillan Press, London.

Petrash, G. (1996), "Dow's journey to a knowledge value management culture", *European Management Journal*, Vol. 14 No. 4, pp. 365-73.

Raffounier, B. (1995), "The determinants of voluntary financial disclosure by Swiss listed companies", *The European Accounting Review*, Vol. 4 No. 2, pp. 261-80.

Sengupta, P. (1998), "Corporate disclosure quality and the cost of debt", *The Accounting Review*, Vol. 73 No. 4, pp. 459-74.

Stanga, K. (1976), "Disclosure in published annual reports", *Financial Management*, Vol. 5 No. 4, pp. 42-55.

Sveiby, K.E. (1997), "The intangible asset monitor", *Journal of Human Resource Costing and Accounting*, Vol. 14 No. 8, pp. 365-73.

Zambon, S. (2003), *Study on the Measurement of Intangible Assets and Associated Reporting Practices*, Commission of the European Communities, Enterprise Directorate General, Brussels.

Further reading

Jensen, M. and Meckling, W. (1976), "Theory of firm: managerial behaviour, agency costs, and ownership structure", *Journal of Financial Economics*, Vol. 3 No. 4, pp. 305-60.

Singhvi, S. and Desai, H. (1971), "An empirical analysis of the quality of corporate financial disclosure", *The Accounting Review*, Vol. 46 No. 1, pp. 129-38.

Lev, B. (2001), *Intangibles: Management, Measurement, and Reporting*, Brookings Institution, Washington, DC.

Corresponding author

Michela Cordazzo can be contacted at: mcordazzo@unibz.it