



Biopharmaceutical and chemical firms' R&D disclosure, and cost of equity: The impact of the regulatory regime



Fabio La Rosa ^{a,*}, Giovanni Liberatore ^b

^a Faculty of Economics and Law Sciences, KORE University of Enna, Cittadella Universitaria, 94100 Enna, Italy

^b Department of Business Administration, University of Florence, Via delle Pandette 9, 50127 Florence, Italy

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ABSTRACT

Based on the proprietary costs theory, this paper aims to survey whether the regulatory regime (mandatory versus voluntary) of research and development (R&D) narrative disclosures impacts, by the means of a reduced information asymmetry, on the cost of equity capital. In order to construct a disclosure index to investigate the extent and the comprehensiveness of R&D information, the methodology adopted was the content analysis of 77 biopharmaceutical and chemical listed companies' management reports from eight Western European countries across the period 2005–2009. Hence, we obtained an (unbalanced) panel data of 309 observations. The cost of capital has subsequently been regressed on the disclosure index. Results confirm a larger amount of R&D disclosures whereas information is more regulated, but they do not confirm an inverse relation with the cost of capital.

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Introduction

Starting from the earliest evidences on the value relevance of intangible resources, with particular regard to the activities of “research and development” (R&D), (Lev, 1999; Lev & Sougiannis, 1996), scholars have focused on the nature and purpose of the information released outside. The international debate has recently shifted from the standard aspects of financial disclosure (such as the issue of the capitalization of R&D investments) to non-financial disclosure (e.g., Cohen, Holder-Webb, Leda, & Wood, 2012; Dhaliwal, Li, Tsang, & Yang, 2011; Simpson, 2010).

There are specific economic sectors – like the biopharmaceutical – in which the high levels of risk, associated with having to prove the real share value, accessing to capital and maximizing the productivity of R&D investments (Ernst & Young, 2009), seem to find a better response in non-financial disclosure, because of its relevant decision-supporting role for analysts, lenders and investors (Jones, 2007; Lu, 2009). That is, non-financial measures of performance, where promptly delivered, can matter more to investors in alleviating the information asymmetries with managers, than the compliance with the accounting principles (Espinosa, Gietzmann, & Raonic, 2009).

While the complementary role of narrative and financial disclosures has been already underlined (Amir & Lev, 1996), it

should be remarked that the first kind of information can be conveyed either as a consequence of a *prescriptive* regulation or as a *deliberate* decision to inform. Besides, there is a continuum of information levels interposed in between the two disclosure systems, that relates to the responsiveness of managers to communication.

The regulatory system, and particularly the mandatory nature of narrative disclosure, might have significant effects over the quantity, quality and reliability of managers' statements, which on their turn can positively affect investors' behaviors, and thus boost a liquidity growth, a volatility reduction and, as a result, a decrease in the cost of the different sources of capital (Botosan, 1997; Sengupta, 1998). However, the evidence of a relationship between mandatory disclosure and reduction of the capital cost is still scanty (Hail & Leuz, 2006; Healy & Palepu, 2001). It should as well be considered that the release of information involves a cost – basically due to its confidential nature (Verrecchia, 1983) – because disclosing favorable information may increase the market price but it might also induce a competing firm to take an adverse action (Wagenhofer, 1990). Consequently, the nature of the information realized and the discretionary behavior of the management might generate negative (rather than positive) effects on the perception of investors, and by that on the cost of capital.

Based on the framework of the “proprietary costs theory” (Verrecchia, 1983), this work is aimed at verifying whether the kind of disclosure regulation for Management Reports (from now on MRs), applied to the listed companies of eight Western European countries, can have some bearing, through the management's

* Corresponding author. Tel.: +39 0935 536 409.

E-mail address: fabio.larosa@unikore.it (F. La Rosa).

disclosure practices, on the cost of equity capital. To this end, using a panel data of 309 observations, we first tested whether the biopharmaceutical and chemical companies of countries with a mandatory regulation on disclosure of R&D activity present higher levels of disclosure compared to companies residing in countries that follow a voluntary regulation. Afterward, we examined whether higher quantitative levels of disclosure – eventually due to the above-said regulatory systems – corresponded to lower levels in the cost of equity, consequent to a reduction of information asymmetry. Hence, this paper aims to examine: (1) the implication of R&D disclosures for biopharmaceutical and chemical firms, especially in terms of cost of equity capital and (2) the role of mandatory disclosures.

This study is meant to extend previous literature by different ways. First of all, disclosure is looked upon as regards a specific component of intellectual (structural) capital – the R&D activity – whereas other studies (e.g., Arvidsson, 2003; Garcia-Meca & Martínez, 2005; Kang & Gray, 2011; Macagnan, 2009) more often consider the reporting on intangibles only as a whole. Since studies investigating the relationship between the cost of equity capital and aggregate disclosures (e.g. Botosan, 1997; Botosan & Plumlee, 2002) have found mixed evidence, additional research is required “to further our understanding of the impact of *different types of disclosure on cost of equity capital*” (italic emphasis added) (Botosan, 2006:38). Different categories within intellectual capital may combine and interact each other and affect the cost of capital in different fashions (Holland, 2003; Holland, 2006), while disaggregating intellectual capital disclosure into single information categories, such as R&D, may reveal valuable additional insights that are likely to be concealed by using aggregate disclosures.

On this premise, we explicitly relate the regulatory regime on R&D narrative disclosure with the cost of equity capital. Although the link between disclosure regulation and cost of capital of firms is one of the most relevant issues in accounting, it is still scantily investigated in literature (e.g., Hail & Leuz, 2006; Lambert, Leuz, & Verrecchia, 2007; Leuz & Wysocki, 2008) and we believe that understanding this link is of substantial interest to firms providing information to capital markets. Standard setters and financial market regulators may also benefit from this investigation and gain further understanding of the regulatory issues of narrative information in order to improve securities markets. We show that firms from countries with stronger requirements on R&D disclosure make larger disclosures than firms from countries where R&D disclosure is weakly and generically required, so supporting the role for a mandatory disclosure. In addition, this finding is important as it suggests that, even in a mandatory context, a firm can discretionarily release only certain kinds of information on R&D. We also find that firms with larger R&D information quantity experience an increase in their cost of capital, although this effect is weaker for firms of more regulated countries, and a key role in determining the sign of this relationship is played by the nature of the R&D information released. Hence, we extend previous studies on the determinants of cost of capital by analyzing the effect of different R&D disclosure items. Even though the finding of a direct relationship between the amount of disclosure and the cost of capital is an unexpected result, we provide for some alternative explanations, so supporting other similar empirical and theoretical results (e.g., Kristandl & Bontis, 2007; Lambert et al., 2007; Richardson & Welker, 2001).

Literature review and hypotheses development

Studies directly exploring the link between disclosure regulation and cost of equity are recent and they generally find mixed evidence. For example, Hail and Leuz (2006) find out that the costs

of equity capital are lower for the companies of countries where disclosure obligations are more extensive, and regulatory mechanisms more strict. Lambert et al. (2007) suggest a theoretical framework in which increasing the quality of mandated disclosures should in general move the cost of capital closer to the risk-free rate for all firms in the economy. However, they also argue that the magnitude of the cost of capital effect of mandated disclosure is unequal across firms, so that improved information may also increase the firm's cost of capital. Still, Kristandl and Bontis (2007) find a negative relationship between the level of forward-oriented information and the cost of equity, and an unexpected positive relationship between the level of historical information and the cost of equity, so providing evidence on the different impact of the temporal context of voluntarily disclosed information. In their study, Richardson and Welker (2001) find that the quantity and quality of financial disclosure is negatively related to the cost of equity capital but, contrary to expectations, obtain a significant positive relation between corporate social responsibility disclosures and the cost of equity. Still, Hail and Leuz (2009) examine the cost of capital effects of US cross-listings and they find that the reduction in the cost of capital for exchange listings is larger for firms from countries with weaker disclosure regulation, so suggesting the idea that the cost of capital effects differ systematically across firms from home countries with different institutional frameworks. Finally, mixed results may be explained by the interaction between accounting policy choice and disclosure (Espinosa & Trombetta, 2007; Gietzmann & Trombetta, 2003). Since the evidence of an unambiguous relationship between mandatory disclosure and reduction of the capital cost is still inadequate (Hail & Leuz, 2006; Healy & Palepu, 2001), we decided to treat separately the two terms of the above relationship.

Regulation of narrative disclosure and reporting on R&D activity

Corporate disclosure has been extensively examined (for a review, Healy & Palepu, 2001; Verrecchia, 2001) and a key result in the existing literature is the difficulty explaining the presence of mandatory disclosure rules. Since firms make disclosure decisions with the objective of maximizing share value and investors pay a fair price for shares, mandatory disclosure leaves investors indifferent and makes firms worse off, because it eliminates the option to withhold information and save the disclosure cost (Dye, 1986; Verrecchia, 1983). A firm will voluntarily disclose all information that can be suitably verified, while if disclosure is costly, firms voluntarily disclose only if the quality of their products exceeds a threshold (Viscusi, 1978). Hence, a firm does not disclose its information either if it is bad, or if it is good but not good enough to accept the proprietary costs that will result from a public disclosure (Verrecchia, 1983). However, some counter intuitive results might also occur, i.e., higher proprietary costs or higher risk of an adverse action can make disclosure of favorable information more or less likely (Wagenhofer, 1990).

Consistently with the above theoretical assumptions suggesting the existence of a voluntary disclosure equilibrium, the debate over the regulatory system of narrative reporting on intellectual capital – meant as a wider information category which takes in the R&D activity – is basically in favor of non-mandatory disclosure. It is said that firms will voluntarily disclose their information, so that where a voluntary reporting regime is provided for – like in the case of the Operating and Financial Review in English companies – intellectual capital disclosure of managers tends to be high (Mangena, Pike, & Li, 2010). In addition, such disclosure does not need to be mandatory because market operators are in a position to acquire the necessary information by other means (Kang & Gray, 2011; Skinner, 2008). Some scholars have also focused on voluntary disclosure with regard to the issue of intellectual capital

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