

Information Dissemination in Mergers & Acquisitions: Purchase Price Allocations, Press Releases, and Business Press †

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Abstract

In order to reduce information asymmetries related to a firm's sources of value creation, firms must consistently provide stakeholders with reliable and relevant information. This paper investigates the information provided through different disclosure channels. 100 purchase price allocations, 94 press releases, 2641 newspaper articles are analyzed for a sample of the largest mergers & acquisitions from 50 U.S. American and 50 European acquirer firms between 2001 and 2008.

The benefits associated with corporate disclosure depend on its credibility. Prior research suggests that credibility of voluntary disclosure is enhanced by future mandatory disclosure requirements and by disclosure of information intermediaries. Our findings support this theoretical proposition. Companies disclose more information about intangibles than information intermediaries. We do not find significant differences between the mean disclosure amount in press releases and purchase price allocations. Moreover, the results show that disclosure about external capital is significantly associated across disclosure channels. Information intermediaries refer to corporate voluntary disclosure when evaluating internal capital, but mandatory disclosure does not.

Keywords: Mergers & Acquisitions; Intangible Assets; Goodwill; Content Analysis; Purchase Price Allocation; Press Releases; Media

JEL descriptors: M40; M41; M16

1. Introduction

A firm's shareholders and other stakeholder groups are concerned about a firm's future prospects. Theory predicts information asymmetries about a firm's current decisions and long-term strategy between management and firm's stakeholders (Akerlof 1970; Healy and Palepu 2001). Information asymmetries and uncertainty about firm value are strongly associated with the firm's intangible resources (Singh and Van der Zahn 2008) that are a major source of future value creation (Hall 1992). Prior literature suggests that disclosure decreases information asymmetries (Healy and Palepu 2001). Intangible resources are generally not recognized in firm's financial statements, and thus estimates of its fair values are not disclosed either (Barth et al. 2001). In the absence of corporate mandatory disclosure about intangible resources, stakeholders are obliged to resort to costly private information acquisition, if possible, in order to nevertheless assess the firm's future prospects accurately. To satisfy stakeholders' information needs and thereby reduce information asymmetries, firms voluntarily disclose information about these resources and inherent value creation potentials (Healy and Palepu 1993). Information intermediaries, besides mandatory and voluntary corporate disclosure, support firms in disseminating information which is a prerequisite for effectively reducing information asymmetries (Bushee et al. 2010; Miller 2006). Beyer et al. (2010) call to investigate interdependencies between the different disclosure channels that shape the corporate information environment.

Mergers & acquisitions¹ (M&As) represent an interesting and powerful setting in which to discuss the firm's information dissemination with regard to intangible resources in particular. M&As are important strategic corporate decisions and one of the key mechanisms for acquiring

¹ The term mergers & acquisitions (M&A) and business combinations are used interchangeably in this paper.

intangible resources (Wernerfelt 1984; Gupta and Roos 2001). Anecdotic evidence supports this argument. In January 2005, Procter & Gamble (P&G) announced the acquisition of Gillette Company. In the press release announcing the acquisition, the chairman, president and chief executive of P&G A.G. Lafley is cited with the following statement: “Gillette and P&G have similar cultures and complementary core strengths in branding, innovation, scale and go-to-market capabilities, making it a terrific fit.“ Obviously, Gillette’s intangible resources such as five billion-dollar brands like Braun, Oral-B or Duracell and its innovation capabilities aroused P&G’s interest in acquiring the company. Financial journalists take up this reasoning provided by P&G’s CEO. The Wall Street Journal (Jan. 28, 2005) writes that “P&G and Gillette would have 21 brands with more than \$1 billion in annual sales each”, and the Financial Times (Jan. 28, 2005) adds that “at a time when new product innovation is widely regarded as the key to staying ahead in the fiercely competitive consumer market, the combination of these two leaders could pose a serious threat to rivals”. Business press reports about and comments on the acquisition, and thereby verifies the statement presented by the company in the press release. The M&A must be accounted for under the purchase method which requires allocating the purchase price to assets acquired and liabilities assumed. The so-called purchase price allocation is included in the notes to the financial statements of Procter & Gamble: minus 21 per cent of the purchase price of about USD 53.5 billion is allocated to net tangible assets², plus 59 per cent to identifiable intangible assets (primarily including brand assets) and plus 62 per cent to goodwill.

Prior research finds that shareholders and other stakeholder groups use a combination of different types of disclosure to evaluate a firm’s current decisions and long-term strategy (Elliott et al. 2008; Hodge and Pronk 2006). Corporate disclosure through annual reports or press

² Net tangible assets correspond to tangible and monetary assets (excl. intangible assets and goodwill) less liabilities.

releases and disclosure by information intermediaries such as the business press are important channels to communicate with and provide information to stakeholders, and thereby are a prerequisite for an efficient capital market (Healy and Palepu 2001). Disclosure channels differ in their timeliness, completeness and credibility of disseminating information about a firm's past performance and future prospects (Farragher et al. 1994; Bassen et al. 2010; Lev 1992). Mandatory corporate disclosure is provided primarily through financial reporting including the financial statements and the notes to the financial statement. In contrast to mandatory financial reporting which is more comprehensive and whose content is highly regulated, voluntary disclosure involves a high margin of discretion and allows the provision of more detailed information such as about the firm's future prospects that is valuable to stakeholders (Aerts and Cormier 2009; Bowen et al. 2005). Voluntary corporate disclosure comprises inter alia communication to analysts, press releases, and web sites. Moreover, information intermediaries such as analysts and the business press further process information received through press releases and other sources, generate new disclosure, and disseminate it to a broader audience (Bushee et al. 2010).

This paper concurrently studies two of the most important communication channels used by management to disseminate information – notes to the financial statements and press releases – and one of the most important information intermediary – the business press. Thus, we respond to the call to investigate interdependencies between disclosure channels that shape the corporate information dissemination process. Bassen et al. (2010) conclude that the benefits associated with corporate disclosure depends on the credibility of corporate disclosure. Healy and Palepu (2001) suggest that credibility of voluntary disclosure is enhanced by future mandatory disclosure requirements and by disclosure of information intermediaries. The research is

designed to analyze what acquirer firms disclose through press releases and to study how business press processes this information and how this information is related to subsequent mandatory disclosures in financial statements. Whether mandatory and voluntary corporate disclosure and disclosure by information intermediaries about intangible assets complement or contradict one another should provide an indication of the credibility of corporate disclosure in M&As.

Our findings suggest that the credibility of corporate voluntary disclosure is enhanced by subsequent corporate mandatory disclosure and by disclosure of information intermediaries. We find that companies disclose more information about intangible resources in corporate mandatory and voluntary disclosure than information intermediaries disclose in business press articles. However, information intermediaries use the information provided in press releases, as disclosures are significantly associated. We do not find significant differences between the mean disclosure amount in press releases and purchase price allocations. The results also show that disclosure about external capital (e.g. brands, customer relationships) is significantly associated through all three different disclosure channels. Whereas information intermediaries refer to corporate voluntary disclosure when evaluating internal capital (e.g. R&D, processes), mandatory disclosure is not related to prior voluntary disclosure. Disclosure about human capital is not significantly related between all three disclosure channels.

This study contributes to existing streams of research in three ways. The first is the literature that explores the corporate information environment. In their literature review, Beyer et al., (2010) notice that prior research in this field focuses on a single disclosure channels and neglects interdependencies between different disclosure channels. Moreover, research centers on the dissemination of quantitative historical financial information, but rather ignores qualitative

information that provides details about current decisions or explains the firm's long-run strategy (Beyer et al. 2010). We investigate the corporate information environment in the context of a strategic decision. In order to satisfy information needs of stakeholders and thereby reduce information asymmetries, the acquirer firm provides detailed information about the intangible resources acquired in the M&A. We also assess the interdependencies between the three most important disclosure channels involved: notes to the financial statements, press releases and business press articles. Second, we contribute to the literature about disclosure by information intermediaries. The majority of prior research focused on the role of financial analysts as information intermediaries and information such as earnings forecasts provided by them (Healy and Palepu 2001; Beyer et al. 2010). However, the business press plays a key role in disseminating information to the public (Bushee et al. 2010; Miller 2006). In this paper, we examine the role of business press as information intermediary disseminating information about a firm's future prospects. Third, the findings of this study also contribute to the literature on disclosure about intangible resources. Most of the prior studies focused on disclosure about intangible resources in annual reports (Singh and Van der Zahn 2008). To the best knowledge of the author, we are one of the first that provide details about the disclosure about intangible resources in press releases and in business press articles. Moreover, very few studies have addressed the issue of disclosure about intangible resources in M&As (e.g., for mandatory corporate disclosure cf. Shalev 2009) although intangible resources play a key role in determining the purchase price in an M&A. We provide further details on intangible resources acquired in M&As.

The remainder of the paper is organized as follows. The next section presents a theoretical framework for analyzing corporate information environment, and develops the hypotheses.

Section 3 focuses on sample selection and research design. Results are reported in Section 4. Finally, concluding remarks are provided in Section 5.

2. Theoretical Framework: related research and hypothesis development

First, we discuss information demand and supply by looking at information dissemination through corporate mandatory and voluntary disclosures, and disclosure by information intermediaries. Second, we focus on the characteristics of disclosure channels with regard to M&As in particular. Third, we develop hypotheses about information dissemination.

2.1. Corporate information environment

Corporate disclosures as well as disclosures by information intermediaries enhance the information available to shareholders and other stakeholder groups in the market. Figure 1 gives an overview about the information dissemination process.

[Insert Figure 1 here]

The demand for disclosure of information arises for two major reasons: information asymmetries (information problem) and the separation of ownership and control (agency problem) (Beyer et al. 2010; Healy and Palepu 2001). Apart from reducing information asymmetry between firms, intermediaries and stakeholders (Akerlof 1970), disclosure of information plays a key role in mitigating agency conflicts (Jensen and Meckling, 1976). The benefits of disclosure are always accompanied with costs for preparing and communicating information. Thus, firms voluntarily disclose all their private information only under certain conditions (for a detailed discussion cf.

Beyer et al. 2010). Restraining from voluntarily disclosing all private information gives rise to mandatory disclosure requirements (Beyer et al. 2010).

In this paper, we investigate the interdependencies between mandatory and voluntary disclosure and disclosure by information intermediaries about intangible resources acquired in M&As. Acquirer firm's management typically has more information about the firm's future prospects than shareholders and other outsiders. Disseminating timely, credible, and complete information about a firm's future prospects is a prerequisite for realizing the benefits of disclosure discussed above (Bassen et al. 2010; Healy and Palepu 2001).

2.2. Disclosure of information about M&As

When strategic decisions such as M&As are announced, the firm typically publishes a press release in order to explain the reasons for this decision in detail. Information intermediaries such as the business press select a subset of these press releases to disseminate to the public. The business press uses the information contained in the press release, adds further information and publishes a news article. Eventually, the decision is reflected in the acquirer firm's financial statements. With the completion of the M&A the acquirer firm has to present a purchase price allocation in the notes to its financial statements. Figure 2 shows an exemplary timeline of disclosure events surrounding M&As.

[Insert Figure 2 here]

Mandatory corporate disclosure

Mandatory corporate disclosure about M&A is provided through financial reporting including the financial statements, the notes to the financial statement, and other mandatory filings (Healy and Palepu 2001). The US-GAAP and IFRS accounting regulations for business combinations are largely comparable. The FASB issued SFAS 141 Business Combinations in July 2001; the IASB issued the matching standard IFRS 3 Business Combinations in March 2004.

All business combinations within the scope of SFAS 141 and IFRS 3 are accounted for under the purchase method³ (SFAS 141.13; IFRS 3.14). In the so-called purchase price allocation, the purchase price is allocated to assets acquired and liabilities assumed (SFAS 141.35-42; IFRS 3.36-60). Accounting for business combinations under both US-GAAP and IFRS provides one of the rare opportunities for recognizing intangible assets. After all tangible and intangible assets acquired and liabilities assumed are identified, the fair values of these assets and liabilities have to be determined. Goodwill is defined as the residual from a comparison of the purchase price with the fair values of identifiable assets and liabilities (SFAS 141.43; IFRS 3.51). Acquiring firms are obliged to disclose information concerning intangible assets and goodwill acquired in business combinations (SFAS 141.51-53; IFRS 3.67-77). We analyze the notes to the financial statements which include the allocation of purchase price to assets acquired and liabilities assumed.

Corporate mandatory disclosures are rule-based, detail-oriented, but less complete. Their ability to convey information about firm's future prospects is limited since they include qualitative and forward-looking information only to some extent (Kothari et al. 2009). However, the disclosure of fair values for intangible assets acquired contains such forward-looking information. Even if

³ In SFAS 141 (revised 2007) and IFRS 3 (revised 2008) the term purchase method is replaced by the term acquisition method. However, the accounting for business combinations is discussed based on the original accounting standards SFAS 141 and IFRS 3 in this paper. The revised accounting standards SFAS 141 (rev. 2007) and IFRS 3 (rev. 2008) are neglected, as the sample period spans from 2001 to 2008 for U.S. business combinations, and from 2005 to 2008 for European business combinations.

management faces incentives to favorably skew disclosures, the financial statements are regarded as a rather credible source of information as they are highly regulated and finally also audited. Corporate mandatory disclosures are less timely than corporate voluntary disclosures. Once the information is represented in the firm's financial statements, it is already widely known (Kothari et al. 2009).

Voluntary corporate disclosure

Garcia-Meca et al. (2005) differentiate between two types of communication channels through which voluntary corporate disclosures are usually provided. On the one hand, firms may disclose information through private channels such as presentations to analysts addressing the information needs of a specific group of stakeholders such as analysts. On the other hand, firms use public channels for voluntary disclosures such as websites or press releases. Acquirer firms typically issue a press release to announce an M&A. Thus, we will focus on acquirer firm press releases that provide financial journalists and other stakeholders with more detailed information about the M&A.

Timeliness is a key advantage of voluntary corporate disclosures such as press releases. Thus, firms quickly provide information to stakeholders. They use this information in order to assess the impact of and properly react to the firm's strategic decision. Whereas a press release is usually published at the date the M&A is announced, a preliminary purchase price allocation is published at the completion date at the earliest, and the final purchase price allocation can be published even one year after completion date at the latest. After a strategic move such as an M&A, stakeholders are likely to demand additional forward-looking qualitative information to evaluate future prospects. Past and current measures of acquirer firm's performance do not allow drawing conclusions about future performance. Management typically uses voluntary disclosure

to disseminate information generally not released otherwise and to highlight the most relevant information for investors. Moreover, a press release has the potential to convey useful information since it may cover a broader spectrum of topics than both mandatory corporate disclosures and disclosures by information intermediaries. However, management faces incentives to favorably skew disclosures.

Disclosure by information intermediaries

In addition to corporate disclosure, information intermediaries such as analysts and journalists play an important role in the dissemination process between the firm and its stakeholders (Healy and Palepu 2001). Information intermediaries collect, evaluate and package information for consumption by shareholders and other stakeholders. Analysts use information communicated to them, and then prepare reports and give recommendations on firms. Journalists use the information contained in corporate disclosures as well and search for additional information in order to develop newspaper articles. Both analysts and journalists act as multipliers; they disseminate the information they collect to the public. However, the media reach a bigger audience. Thus, we focus on newspaper articles published in connection with the announcement of the M&A.

Newspaper articles are quite timely, as the information about current events such as the announcement of an M&A is disseminated to the readers within a short period of time after the event took place. Journalists are expected to report in an objective and unbiased way about the M&A as their incentives to positively skew their articles are rather weak. Thus, credibility of disclosure by the business press is higher than that for companies in press releases (Kothari et al. 2009). Depth of the press coverage depends on the accessibility of information provided by the firm itself and other sources.

2.3. Hypotheses development

Tightening the link between previous theoretical research and an empirical analysis is a prerequisite for a better understanding of the information dissemination process. We therefore refer not only to previous empirical but also to previous theoretical work in developing the hypotheses regarding the interdependencies between the different disclosure channels.

Preceding discussion of disclosure characteristics suggest that corporate disclosures are likely to be more detailed whereas business press articles cover topics more generally. Press releases and business press articles are always timelier than financial reporting. In contrast to financial reporting and business press articles, press releases are likely to be less credible.

The novelty of information – completeness and timeliness – contained in the disclosure and its credibility affect shareholders and other stakeholders reaction to corporate disclosures (Jennings 1987). In M&As, information about target firm’s intangible resources are disclosed for the first time. When evaluating new information, stakeholders take corporate disclosure into consideration, only if they perceive it as credible (Mercer 2004). The benefits associated with corporate disclosure primarily depend on the credibility of disclosure (Bassen et al. 2010). Mercer (2004) suggests that four factors affect credibility of disclosure: situational incentives, management’s credibility, external and internal assurance as well as disclosure characteristics.⁴

In this paper, we refer to external assurance in order to assess credibility of disclosure and thereby discuss interdependencies between disclosure channels. Auditors or information intermediaries provide such external assurance. Healy and Palepu (2001) conclude that credibility of voluntary disclosure is enhanced by disclosure of information intermediaries and by future mandatory disclosure requirements. Whereas the verification by business press “is not

⁴ Please refer to Mercer (2004) for a detailed discussion of the factors affecting credibility of disclosure.

in any way formal nor can it be argued to be necessarily complete” (Kothari et al. 2009, 1647), auditors formally verify the information provided through financial statements (Healy and Palepu 2001). Based on his analytical model, Lundholm (2003) argues that mandatory corporate disclosure serves as an ex-post validation of prior voluntary corporate disclosures. The availability of mandatory corporate disclosure alone increases the credibility of voluntary corporate disclosure. Probably, disclosure by information intermediaries has a share in increasing credibility of voluntary corporate disclosure, too. Shareholders and other stakeholders evaluate the credibility of voluntary corporate disclosure based on related mandatory corporate disclosure and disclosure by information intermediaries over a longer period. Stocken (2000) shows that both the usefulness of mandatory corporate disclosure and the continuous assessment of disclosure performance are a prerequisite for the credibility of voluntary corporate disclosure. He concludes that the management almost always releases credible forward-looking information that is useful for assessing the firm’s future prospects accurately. Only in a single-period setting, management does not disseminate any information at all.

We follow these arguments and assume that credibility of voluntary disclosure will be enhanced, if the information intermediaries refer to voluntary corporate disclosure by taking up the information provided by the company. Moreover, mandatory corporate disclosure will only contribute to credibility of voluntary disclosure, if the same kind of information is reflected in both disclosure channels. Since voluntary corporate disclosure about M&As is one element of the whole corporate disclosure environment, we expect that the conditions for the credibility of voluntary disclosure formulated by Stocken (2000) and Lundholm (2003) hold. Even if M&As are no regular events, they are not uncommon to the management and the firm’s stakeholders. Besides, stakeholders may refer to all mandatory corporate disclosures – and even disclosures by

information intermediaries – in order to evaluate corporate disclosure performance and if necessary revise the assessment of the credibility of voluntary corporate disclosures (Stocken 2000).

In the press release, the acquirer firm provides information about intangible resources acquired in the M&A being aware of information intermediaries and itself disclosing information about those resources afterwards (Lundholm 1999). Inspired by Stocken (2000) and Lundholm (2003), credibility is measured based on the amount of information and the association between the amounts of information disclosed through different disclosure channels. We expect that the amounts of information about intangible resources do not differ between different channels of disclosure. This gives rise to the following hypotheses H1a and H1b:

H 1a: The amount of information about intangible resources provided in press releases does not differ from the amount of information about intangible resources provided in notes to the financial statements (purchase price allocation).

H 1b: The amount of information about intangible resources provided in press releases does not differ from the amount of information about intangible resources provided in business press articles

Moreover, the credibility is increased if the information provided in corporate voluntary disclosures is reflected in corporate mandatory disclosures and disclosures by information intermediaries. We expect that the amounts of information about intangible resources are

strongly associated between the different channels of disclosure. This gives rise to the following hypotheses H2a and H2b:

H 2a: The amount of information about intangible resources provided in press releases is positively related to the amount of information about intangible resources provided in notes to the financial statements (purchase price allocation).

H 2b: The amount of information about intangible resources provided in press releases is positively related to the amount of information about intangible resources provided in business press articles.

3. Research design

The objective of the empirical study is to investigate the interdependencies between disclosure about intangibles in the purchase price allocations (mandatory disclosure), in press releases (voluntary disclosure), and in business press articles (disclosure by information intermediaries). First, we describe the sample selection, and second discuss the data collection for the different disclosure channels through content analysis.

3.1. Sample selection

We identified M&As with the help of the *Bureau von Dijk ZEPHYR* database. The initial sample comprises U.S. American and European transactions sorted by deal value in descending order. The sample is limited to quoted acquirer firms either from the United States or Europe. The sample period spans from July 1, 2001 to December 31, 2008 for business combinations of U.S.

acquirer firms and from January 1, 2005 to December 31, 2008 for business combinations of European acquirer firms. The choice of the sample periods is governed by the fact that business combinations analyzed have to be accounted for according to SFAS 141 and IFRS 3. SFAS 141 is applicable for business combinations completed after June 30, 2001. All European listed firms are required to use the international financial reporting standards (IFRS) including IFRS 3 since January 1, 2005 (The European Parliament and The Council of the European Union 2002). The sample was restricted to the largest M&As of U.S. and European acquirer firms. This restriction imposed on sample selection has at least two advantages. First, information intermediaries such as the business press rather tend to concentrate on and cover larger firms (Fang and Peress 2009; Miller 2006). Second, larger acquirer firms are supposed to be more experienced in accounting for business combinations and the notes to their financial statements contain the most detailed information.

The kind of mandatory disclosure chosen in this study is the note to the financial statement regarding business combinations always including a purchase price allocation. For all major business combinations under SFAS 141 or IFRS 3, the acquirer firm provides an individual purchase price allocation in the notes to their financial statement. Purchase price allocations are obtained manually from the notes to the acquirer firm's annual financial statements taken from the *U.S. Securities and Exchange Commission's EDGAR* database for U.S. acquirer firms and corporate web sites for European firms respectively. We chose the English-language annual reports wherever possible. 50 U.S. and 50 European M&As constitute our final sample.

Press releases are the voluntary disclosure channel examined in this study. As mentioned in section 2.2, press releases are important means of disclosure because they are widely disseminated to the firm's stakeholders and picked up by the information intermediaries such as

the business press. Most acquirer firms issue a press release on the announcement date of the M&A. Press releases were gathered from the *U.S. Securities and Exchange Commission's EDGAR* database. If not available from this source, we manually searched the corporate web sites of the acquirer firms. If more than one press release is published on the announcement date of the M&A, the longest one, measured in amount of words, is chosen for analysis. The longest press release is supposed to provide the most detailed information. We selected the English-language press release when versions in several languages are available. In six cases press releases could not be found as the *U.S. Securities and Exchange Commission's EDGAR* database nor the news archives of the acquirer company websites did date back to the announcement date of the M&A. Eventually, 94 press releases out of 100 M&As were collected.

Since business press collects information and spreads it to wide audience of stakeholders, we use newspaper articles about these M&As to proxy for disclosure by information intermediaries. We focus on daily business newspapers in order to assure broad coverage of the M&A. We included not only English-language but also German- and French-language business newspapers in order to additionally consider two economically important European countries, Germany and France, and avoid a possible language bias in coverage of acquirer firms from non-English speaking countries. Business press articles are taken from seven influential newspapers from the U.S. and Europe. We choose the *Wall Street Journal* and the *New York Times* from the United States of America, as these two newspapers have the most comprehensive coverage of U.S. companies (Fang and Peress 2009).⁵ Fang and Peress (2009) observe a high overlap in the coverage for a sample of four U.S. newspapers. However, it is reasonable to include European business newspapers where the overlap is probably lower. We choose the *Wall Street Journal's* European

⁵ According to the North American Audit Bureau of Circulation, the *Wall Street Journal* and the *New York Times* had average daily circulations of 2.0 and 1.1 million paid copies from July 1, 2001, to December 31, 2008, respectively.

counterpart *Wall Street Journal Europe* and four influential business newspapers from the biggest European countries including *Financial Times* (United Kingdom), *La Tribune* (France), as well as *Handelsblatt* (Germany) and *Financial Times Deutschland* (Germany).⁶ Focusing on these seven newspapers and anticipating a high overlap in coverage in same language newspapers in the same region (Fang and Peress 2009), we provide data that are representative of the press coverage of U.S. and European M&As. The newspaper articles published in the seven business newspaper are the analyzing units for the content analysis of disclosure by information intermediaries. We searched *Dow Jones Factiva* database for articles that refer to the M&As and are published in our sample in six out of seven U.S. and European newspapers. To collect the articles published in *Handelsblatt*, the German database *wiso* of the *GBI-Genios Deutsche Wirtschaftsdatenbank GmbH* is used. The search items consist of both the name of the acquirer firm and the name of the target firm. For every M&A the time period of one week around the announcement date is chosen as the majority of business press articles is published in this time period. After the initial search duplicates are removed. Eventually, the data base comprises a total sum of 2641 business press articles about the 100 M&As of our final sample.

Table 1 summarizes the sample selection.

[Insert Table 1 here]

⁶ Our sample of European newspapers includes influential and highly circulated business newspapers from the United Kingdom, France and Germany. According to the British Audit Bureau of Circulation, *Financial Times* and *Wall Street Journal Europe* had average daily circulations of 0.44 and 0.08 million paid copies from January 1, 2005, to December 31, 2008, respectively. According to the French equivalent OJD, *La Tribune* had an average daily circulation of 0.08 million paid copies from January 1, 2005, to December 31, 2008. According to the German equivalent IVW - Informationsgemeinschaft zur Feststellung der Verbreitung von Werbeträgern e.V., *Handelsblatt* and *Financial Times Deutschland* had average daily circulations of 0.14 and 0.10 million paid copies from January 1, 2005, to December 31, 2008, respectively. Moreover, German financial experts rank *Handelsblatt* and *Financial Times Deutschland* first and second important source of financial information according to a study about the financial community by iq media marketing (formerly GWP Media-Marketing) in 2006 and 2008.

3.2. Content Analysis

Content analysis has become a widely used method of analysis in financial accounting research (Beattie and Thomson 2007). It is a methodology which codifies text into categories and quantifies frequencies of occurrences within each category (Krippendorff 2004). In the present paper we use content analysis to get an insight into mandatory and voluntary disclosure practices about intellectual capital acquired by companies in M&As as well as related disclosure by information intermediaries in the process of M&As. The maintained hypothesis throughout our analysis is that the amount of information disseminated reflects the importance of intellectual capital in an unbiased manner. The application of the method consists of four different steps (Krippendorff 2004): the choice of the framework used to clearly classify information; the definition of the recording unit; the coding; and the assessment of the level of reliability achieved. The following paragraphs will discuss the procedure in detail.

Framework

Beattie and Thomson (2007), p. 132, believe "... that a broad consensus exists that intellectual capital comprises three major categories: human capital, structural capital and relational capital." Synonymous terms such as employee competence instead of human capital, internal capital or organisational capital instead of structural capital or external capital for the term relational capital are being used interchangeably (Beattie and Thomson 2007). Derived from Sveiby (1997) and further detailed in the influential MERITUM Report (2001) the framework with the three categories is adopted in the present paper. The categories human capital, internal capital and

external capital as defined in the MERITUM Report (2001) are explained in detail. Additionally, examples of the elements in the framework are listed below:

(1) Human capital: The knowledge that employees take with them when they leave the firm. It includes the knowledge, skills, experiences and abilities of people. Some of this knowledge is unique to the individual, some may be generic.

Items relating to human capital are e. g. employee, expertise, incentive system, motivation and corporate culture. The category comprises 47 items.

(2) Internal capital: The knowledge that stays with the firm at the end of the working day. It comprises the organisational routines, procedures, systems, databases, etc. Some of them may be legally protected and become Intellectual Property Rights, legally owned by the firm under separate title.

R&D, patent, database, management process, restructuring, branch and media presence are examples of items used for the content analysis. The category comprises 47 items.

(3) External capital: All resources linked to the external relationships of the firm. It comprises that part of human and structural capital dealing with the company's relations with stakeholders (investors, creditors, customers, suppliers, etc.) plus the perceptions that they hold about the company.

Items such as e. g. customer relations, supplier, trademark, brands, franchising agreements, share buyback options for shareholders are searched for. The category comprises 62 items.

To summarize, the framework consists of 156 items in the presented three categories and is illustrated in Appendix 1.

Recording Unit

For the quantification of intellectual capital disclosure the recording unit, i. e. the basis for coding information, needs to be defined. Abdolmohammadi (2005) argues that the most reliable form of content analysis is to search the text for specific instances of disclosure, so that the coder does not have to make any subjective judgement about the meaning or importance of the subject which may be required in coding sentences, paragraphs or pages. The term “instance” indicates semantically equivalent textual units, including word synonyms and idioms (Weber 1990; Beattie and Thomson 2007). The coding of instances of disclosure has the advantage of being categorised more easily and permits the counting of possibly more than one intellectual capital instance per sentence, paragraph or page (Beattie and Thomson 2007). Another aspect is the etymological structure of different languages resulting in a different length of words for the same content (Campbell et al. 2005). As we analyse texts in English, German, and French we have to consider translations consisting of different numbers of words. Therefore, we use instances of intellectual capital disclosure as recording units. Regarding the translation of the instances of intellectual capital disclosure we employ a mixture of translation methods advocated by Harpaz (2004). First, the second named author translated all terms in English and French, including synonyms and idioms. Second, the first named author reproduced the translation. Both authors are proficient in the three languages German, English and French. After the individual translating process, both authors discussed their results and completed the translation of the intellectual capital items. For a small sample of five companies the translated coding scheme was pretested and extended.

Coding

The coding is conducted with the help of MAXQDA, software for qualitative data analysis. We decided for the electronic version of content analysis as it produces more reliable results than the

coding procedure of individual coders making subjective evaluations (Krippendorff 2004). Besides, a large sample of data can be processed (Krippendorff 2004). The analysing units (purchase price allocation documents, press releases, and business press articles) must be available in digital form. Similar to Orens and Lybaert (2007) we use a binary coding scheme, coding occurring items in the analysing units with “1” and otherwise “0”. Binary coding is often being criticized since it does not take into account the differences in importance attached to the various information (Orens and Lybaert 2007). However, previous studies found similar results whether or not the information items were weighted (Cooke 1989; Marston and Shrives 1991). The main premise of content analysis is that the frequency with which a unit of analysis appears in a text indicates the importance of the unit (Krippendorff 2004; Striukova et al. 2008). Repetitions and redundancies are means of communication strategy used for emphasis and reinforcement and signal the importance placed by management upon these messages (Beattie and Thomson 2007). Concluding that companies as well as journalists put emphasis on certain aspects in the disclosure by repeating them, we consider repetitions of instances in the coding process.

Following García-Meca et al. (2005), we use a general disclosure index, which reports the quantity of intellectual capital items of the established framework that are considered as communicable by the company in the purchase price allocations (PPA_TOT) and press releases (PR_TOT) as well as by the information intermediaries in the news articles (NA_TOT). The disclosure indices (PPA_TOT, PR_TOT, NA_TOT) are further put in proportion to the total amount of words for the PPA documents, press releases, and business press articles, respectively, as it provides a more credible comparison across different types of disclosure with differing length (Striukova et al. 2008). Hence, we formulate the general disclosure index for (1)

mandatory disclosure in purchase price allocations (PPA_TOT), (2) voluntary disclosure in press releases (PR_TOT), and (3) disclosure by information intermediaries in news articles (NA_TOT) for a firm j over the $i=1-3$ categories (human capital, external capital, internal capital) with the k amount of disclosure documents as follows:

$$(1) PPA_TOT_j = \frac{(PPA_INT_j + PPA_EXT_j + PPA_HC_j)}{words_j}$$

$$(2) PR_TOT_j = \frac{(PR_INT_j + PR_EXT_j + PR_HC_j)}{words_j}$$

$$(3) NA_TOT_j = \frac{(NA_INT_j + NA_EXT_j + NA_HC_j)}{words_j}$$

For the three categories of intellectual capital we compute the disclosure index over each category for the information disclosed by the companies in the purchase price allocations (PPA), in the press releases (PR) and for the information disclosed by the information intermediaries in the news articles (NA). Therefore, we calculate subindexes as ratios of actual scores awarded to the total amount of words for the different disclosure documents. Consequently we obtain the subindexes relative to human capital (PPA_HC, PR_HC, NA_HC), external capital (PPA_EXT, PR_EXT, NA_EXT) and internal capital (PPA_INT, PR_INT, NA_INT).

[Insert Table 2 here]

Reliability

A major concern in using the method of content analysis is its reliability. Krippendorff (2004) identifies three types of reliability: accuracy, reproducibility and stability. We refer to these three

dimensions of reliability and to our measures to ensure the credibility of our findings. First, accuracy is the degree to which a process conforms to a predefined standard (Krippendorff 2004). In the present study it is ensured by intensive coder training with experienced coders (the two authors) and the consistent coding procedure with the analysis software MAXQDA and well-specified categories in the intellectual capital framework (Beattie and Thomson 2007). Reproducibility is achieved when a process can be replicated by different coders working under varying conditions and at different locations (Krippendorff 2004; Milne and Adler 1999). Coders that work independently have to apply the same recording instructions to the same units of analysis. In the present study reproducibility can be assured by the application of the same recording instructions and the use of the analysis software by the two coders. Third, the stability refers to the ability to code data the same way over time (Milne and Adler 1999). By conducting the electronic version of content analysis stability is verified as the results stay the same over time.

4. Empirical Results

The following section provides the results of the empirical analyses and test the hypotheses developed section 2.3. First, the descriptive statistics for mandatory disclosure in purchase price allocations, voluntary disclosure in press releases and disclosure by information intermediaries in business press articles are presented in section 4.1. Second, we address information dissemination by comparing quantity of and association between intellectual capital disclosure by companies in their purchase price allocations and press releases as well as by information intermediaries in the business press articles in section 4.2.

4.1. Descriptive statistics

Mandatory disclosure: Purchase price allocations

In the 100 purchase price allocation documents analyzed (PPA_TOT) we found that, on average, 0.73 % of the total intellectual capital disclosure items are disclosed by firms. Further details are presented in Table 3. Taking a closer look at the two regions, it can be stated that companies from the USA (0.69 %) and companies from Europe (0.77 %) disclose about the same amount of intellectual capital items in their purchase price allocations, indicating a similar behavior towards intellectual capital disclosure in mandatory disclosure in connection with M&As.

[Insert Table 3 here]

The analysis of intellectual capital disclosure by categories (subindexes) reveals that companies put emphasis on certain aspects when communicating the M&A (see Table 4). In purchase price allocations information on external capital (PPA_EXT) are the most frequent with, on average, 0.36 % disclosed intellectual capital items for all acquirer companies. This finding is not surprising as part of external capital items are allowed to be recognized in the balance sheet of the acquirer after the completion of the M&A. Hence, acquirer firms expose the amount and, if possible, value of external capital items in the purchase price allocation. They broach the issue of brands and trademarks as the example of Procter & Gamble's statement in the purchase price allocation document shows: "The majority of the intangible asset valuation relates to brands."⁷ Besides, customer relations are topic of conversation, exemplified by the Telefónica Group reporting about evaluating its customer base: "The customer base was measured using the

⁷ Purchase price allocation of Procter & Gamble.

MEEM (“Multiple Excess Earnings Method”), which is based on calculating the present value of the future cash flows of the future economic benefits attributable to the customer base.”⁸ Matters concerning supplier or investor relations are rarely addressed.

[Insert Table 4 here]

Intellectual capital disclosure on internal capital (PPA_INT) seems less frequent than on external capital. European acquirer companies disclose, on average, 0.26 % of internal capital items whereas US-American companies publish slightly less with an average of 0.24 %. Topics include the restructuring of the companies, obtained licenses, R&D and intellectual property, as the examples of Boston Scientific and AT&T illustrate:

- “We continue to incur integration and restructuring costs as we integrate certain operations of Guidant.”⁹

- “Substantially all of the licenses acquired have an indefinite life, and accordingly, are not subject to amortization.”¹⁰

We found that human capital is the least disclosed category relating to purchase price allocations (PPA_HC). With a ratio of 0.12 % for all acquirer firms, the average disclosure amount on human capital is lower than in the other categories. An evident reason could be the accounting prohibition of issues relating to human capital under SFAS 141 (USA) and IFRS 3 (Europe). Acquirer companies avoid detailed information on issues they are not allowed to disclose separately in the balance sheet. Nevertheless, topics influencing the valuation of the business

⁸ Purchase price allocation of Telefónica Group.

⁹ Purchase price allocation of Boston Scientific.

¹⁰ Purchase price allocation of AT&T.

combination like skills and experience of the workforce in the case of Taylor Woodrow or costs in the case of Nextel are discussed:

- “The total provisional goodwill arising is £336.7m and reflects anticipated synergy benefits from the merger. This includes [...] and benefits from merging the skills and experience of the Taylor Woodrow and George Wimpey workforce.”¹¹

- “These costs are primarily associated with Nextel employee retention bonuses earned on the date of the merger and severance benefits for involuntary separations of Nextel employees.”¹²

Voluntary disclosure: Press releases

The analysis of the extent of intellectual capital information revealed in press releases (PR_TOT) indicates that firms disclosed, on average, 0.67 % of the total disclosure items (see Table 3). It is interesting to see that the percentage is slightly higher for acquirer companies coming from Europe (0.71 %) than for those from the USA (0.62 %). Yet standard deviations of the disclosure indicate wide variations in the disclosure of the companies in press releases, evidencing the flexibility with which companies report in press releases.

Results of the analysis of intellectual capital disclosure by categories of items (subindexes) can be found in table 4. Consistent with García-Meca et al. (2005) we find that disclosure by intellectual capital categories varies considerably.

The analysis of the press releases reveals that acquirer firms from Europe disclose, on average, 0.35 % of the internal capital items (PR_INT) opposed to US-American acquirer firms disclosing 0.30 % of internal capital items. Topics of internal capital concern the organization and the integration of the acquired target company as the press release of Hewlett-Packard illustrates:

“We have done comprehensive integration planning and have clear metrics to drive our

¹¹ Purchase price allocation of Taylor Woodrow.

¹² Purchase price allocation of Sprint.

success.”¹³ Furthermore, research & development (R&D), patents and new products are discussed: “We are strongly committed to growing Immunex's world-class discovery research capabilities, and we look forward to working closely with the impressive team they have built by concentrating inflammation research in Seattle.”¹⁴

Disclosure on external capital (PR_EXT) seems less frequent than on internal capital. We find that, on average, 0.25 % of the external capital items are disclosed by European acquirer companies in their press releases whereas acquirer firms from the USA disclose slightly less with an average of 0.21 %. The category external capital comprises disclosed items in press releases concerning relations to customers, brands from the target companies and supplier relations. Premier Foods highlights the opportunities in developing the supplier relations after the M&As: “As the largest food producer in the UK, Premier will look to develop its strategic partnerships with the major UK food retailers [...]”¹⁵

As it is the case for the analysis of the purchase price allocations, also for the voluntary disclosure human capital (PR_HC) is the least disclosed category with an average of 0.12 % for American acquirer companies and 0.11 % for European acquirer firms. Following García-Meca et al. (2005), we assume that the low disclosure of human capital information could mean that companies do not think some issues are relevant as value-drivers or that information is not reliable and valid. According to Johanson (2003), problems in disclosures on human resources are also due to a lack of ownership of intangibles related to people. Furthermore, the reluctant disclosure on human capital could be caused by the prohibition of reporting on human capital in the purchase price allocation after the completion of the M&A. Topics of human capital being addressed in the press releases are the combination of the workforce of the acquirer and target

¹³ Press release of Hewlett-Packard, September 3, 2001.

¹⁴ Press release of Amgen, December 17, 2001.

¹⁵ Press release of Premier Foods, December 4, 2006.

company (“The enlarged Yell Group will employ approximately 9,000 -10,000 sales executives.”¹⁶) and the expertise of the management board (“Recognising the excellent work that has been done at Finansbank, the dynamism it has displayed in gaining market share, and the top quality of its management, we decided together with the shareholders of the bank to maintain its current management team.”¹⁷).

Disclosure by information intermediaries: Business Press

Regarding the information on intangible assets disclosed by information intermediaries in news articles (NA_TOT), it can be observed that the media reported, on average, 0.46 % on intangible related aspects (Table 3). Yet again, a difference between the regions is visible. News articles about M&As with acquirer firms coming from the United States report, on average, 0.52 % intellectual capital information, whereas the media report slightly less (0.40 %) about M&As with European acquirer companies involved. In general, it seems that information intermediaries carefully select parts of the information given by the companies in their press releases. Major reasons could be the limited space in news articles and credibility problems journalists face as the information given in the press releases is not verified at that point of time.

Analyzing the intellectual capital categories, we notice a similar trend in the relative amount of disclosed information as in the press releases. The business press articles on M&As in both regions disclose most information on internal capital (NA_INT). Information intermediaries report, on average, 0.19 % on internal capital aspects about M&As with American acquirer companies compared to 0.16 % for European acquirer firms. As the following examples show, the integration of the two merged companies and their operations are topics in this category.

The New York Times on the Aviva/AmerUs merger (July 14, 2006):

¹⁶ Press release of Yell Group, April 28, 2006.

¹⁷ National Bank of Greece/Finansbank press release, April 3, 2006.

“AmerUs brings a national distribution network while Aviva could apply its expertise in selling life assurance through banks to AmerUs's operations.”¹⁸

The New York Times on the Alcatel/Lucent merger (April 9, 2006):

“To make things seem really level, they suggest relocating Ms. Russo, who doesn't speak French, to the combined company's executive offices in Paris, and surrounding her with a management team mostly from Alcatel.”¹⁹

Information on external capital disclosed by information intermediaries (NA_EXT) adds up to 0.22 % for M&As from the United States and 0.15 % for M&As from Europe, yet again highlighting a slight difference between the two regions. Topics addressed in this category are the consolidation of the customer bases, brands and shareholder support:

The Wall Street Journal on the Oracle/PeopleSoft merger (December 16, 2004):

“Phillips, Oracle's co-president, said the company expects the number of PeopleSoft customers who cancel such contract to rise, to 10% or more.”²⁰

The Wall Street Journal on the Federated Department Stores/May Department Stores merger (February 28, 2005):

“Under Mr. Lundgren's leadership, Federated has taken steps to create a national chain and brand, rather than operating and advertising each division regionally.”²¹

Also in the case of the disclosure by information intermediaries human capital items are least reported. On average, 0.11 % and 0.08 % on human capital aspects are disclosed in news articles for M&As from the United States and Europe, respectively. It seems that information intermediaries adopt the caution of the company to report on human capital as they might also

¹⁸ News article of the Aviva/AmerUs merger, *The Financial Times*, July 14, 2006.

¹⁹ News article of the Alcatel/Lucent merger, *The New York Times*, April 9, 2006.

²⁰ News article of the Oracle/PeopleSoft merger, *The Wall Street Journal*, December 16, 2004.

²¹ News article of the Federated/May merger, *The Wall Street Journal*, February 28, 2005.

perceive this kind of information as not value relevant or not reliable. Journalists particularly broach issues such as the consolidation of the workforce, expertise and layoffs as the examples show:

The Wall Street Journal on the Barratt/Wilson Bowden merger (February 6, 2007):

“Mr. Clare said job losses are expected, without giving any indication of the scale of possible cuts. Combined, the companies' work force stands at 7,500 employees.”²²

The New York Times on the Alcatel/Lucent merger (August 9, 2006):

“The merged company, to be based in Paris, expects to shed nearly 9,000 jobs over the next two years. Nobody knows how many New Jerseyans will lose their jobs at Lucent, but the process will seem painfully familiar.”²³

After the illustration of the descriptive results for the mandatory and voluntary corporate disclosure as well as the disclosure by information intermediaries the information dissemination process will be examined in detail by comparing the quantity of and the association between disclosures in section 4.2.

4.2. Information dissemination

In section 2.3 we developed hypothesis about the information dissemination process regarding intellectual capital disclosure by companies (mandatory and voluntary disclosure) and by information intermediaries on the basis of theoretical reasoning. First, hypotheses H1a and H1b concerning the amount of information disclosed are examined. Second, we test hypotheses H2a and H2b regarding the associations between the amount of disclosure in mandatory and voluntary disclosure and disclosure by information intermediaries.

²² News article of the Barratt/Wilson Bowden merger, *The Wall Street Journal*, February 6, 2007.

²³ News article of the Alcatel/Lucent merger, *The New York Times*, April 9, 2006.

To compare the amount of information disclosed, we use the Welch t-test, a modification of the t-test for comparing the means of two groups. In a first step we compare the mean quantity of voluntary corporate disclosure (press releases) with the mean quantity of mandatory corporate disclosure (purchase price allocations). Results are displayed in Table 5. Interestingly, H1a is rejected for the categories of external ($p < 0.01$) and internal capital ($p < 0.05$) in both regions. Looking at the regions separately we only find a significant difference in the quantity of disclosed information for the external capital category. For all other categories as well as the overall category a similar quantity of intellectual capital disclosure in PR and PPA can be assumed. These findings suggest that companies disclose similar amounts of information in their press releases as they disclose later in their purchase price allocations. Therefore, credibility of voluntary disclosure is enhanced.

[Insert Table 5 here]

In a second step we compare the mean amount of voluntary corporate disclosure (press releases) with the mean amount of disclosure by information intermediaries (business press articles). Results can be found in Table 6. In contrast to H1b, we find significant differences between voluntary disclosure (PR) and disclosure by information intermediaries (NA) in all categories except for internal capital in both regions. The same applies to all categories except human capital for the European acquirer companies. For the US-American acquirer companies only the information quantity in the category of internal capital seems to be significantly different between the two communication channels. This provides evidence that information intermediaries treat corporate information cautiously and tend to choose before disclosing it. Therefore, regarding both regions we conclude that credibility of voluntary disclosure is reduced.

[Insert Table 6 here]

It can be assumed that companies use the possibility of writing a press release in order to justify the merger to the stakeholders. Given the nonexistent standards for such kind of press releases it is peculiar that companies don't disclose more information on intangible assets. On the other hand even less information on intangibles are used by information intermediaries for publishing them in business press articles. A reason could be the assumed lack of information relevance for stakeholders. Furthermore, the limited space in the daily press constitutes another possible reason for the bounded use of information on intangible assets.

Finally, we assess the degree of statistical relationship between the amount of disclosure in mandatory and voluntary disclosure and disclosure by information intermediaries. We use the Spearman rank correlation coefficient that measure both size and direction of the relationship between two variables. Table 8 presents the correlation matrix for the general disclosure indexes. According to the Spearman rank correlation coefficients, the general disclosure index for voluntary disclosure in press releases (PR_TOT) is not significantly associated with the general disclosure index for mandatory disclosure in purchase price allocations (PPA_TOT) (H2a: $p > 0.10$). It seems that acquirer firms give different information about intellectual capital in their announcement day press releases and in the purchase price allocation published after completion of the M&A. However, information intermediaries use the information provided in press releases. Both general disclosure indexes (PR_TOT and NA_TOT) are significantly associated (H2b: $p < 0.10$). Moreover, we see a strong association between the information disclosed by information intermediaries and later in purchase price allocations. When management allocates the purchase price to intangible assets, it probably takes into account how the information

intermediaries evaluate the information about intellectual capital disclosed in the press release. The actual amount of purchase price allocated to intangible assets and goodwill in purchase price allocations is significantly associated with the general disclosure index for mandatory disclosure in purchase price allocations (PPA_TOT).²⁴ The sub-sample of U.S. and European M&As provide a slightly different picture. In the U.S. sub sample, corporate mandatory disclosure is significantly associated with prior voluntary disclosure ($p < 0.05$) and disclosure by information intermediaries ($p < 0.01$). The purchase price allocation of U.S. acquirer firms seems to reflect what the firms disclosed in press releases and the media coverage of the M&A. In the European sub-sample, information disclosed in news articles reflect information provided in press releases ($p < 0.05$). The credibility of corporate voluntary disclosure is enhanced by both disclosure of information intermediaries especially when European M&As are concerned and corporate mandatory disclosure when U.S. M&As are concerned.

[Insert Table 8 here]

We have to examine if the results for general disclosure indexes also hold for disclosure subindexes. Table 8 presents the correlation matrix for the disclosure subindexes for the total sample. We find a positive association between the disclosure subindex for external capital in press releases (PR_EXT) and in news articles (NA_EXT) ($p < 0.01$) as well as in purchase price allocations (PPA_EXT) ($p < 0.05$). Obviously, external capital is more easily verifiable, related disclosure more credible. The disclosure subindex for internal capital in press releases (PR_INT) is only associated with the disclosure in news articles (NA_INT) ($p < 0.01$). Internal capital is not as easily verifiable as external capital. Acquirer firm's management probably waits how

²⁴ Results are not tabulated here.

information intermediaries evaluate the internal capital of the target firm. The disclosure subindex for internal capital in purchase price allocations (PPA_INT) is also significantly related to the disclosure subindex for internal capital in news articles (NA_INT) ($p < 0.05$). Disclosure subindexes relative to human capital (PPA_HC, PR_HC, NA_HC) do not significantly correlate ($p < 0.01$). Human capital topics do play a role in M&As. However, human capital is not allowed to be recognized separately in purchase price allocations and will be only be subsumed under goodwill. The correlation matrix for the U.S. and the European sub-samples provide similar results.

[Insert Table 8 here]

5. Conclusions

This study empirically examines the dissemination of information about intangible resources acquired in M&As. We find that companies disclose on average 0.3 % of intellectual capital information in mandatory corporate disclosure and 0.67 % in voluntary corporate disclosure, whereas information intermediaries only disclose on average 0.46 % in business press articles. The comparison of the amount of intellectual capital disclosure in purchase price allocations and press releases by companies reveals that there is a significant difference in quantity of disclosed information on external capital in press releases and purchase price allocations for US-American and European acquirer firms. For the corporate disclosure in the categories internal capital and human capital of US-American and European acquirer firms we do not find significant differences between the mean disclosure amount in press releases and purchase price allocations. Comparing the amount of disclosure about intellectual capital in press releases and

business press articles, we find a significant difference between the disclosure over all categories by companies in press releases and by information intermediaries in business press articles for both regions. However, information intermediaries use the information provided in press releases, as both general disclosure indexes (PR_TOT and NA_TOT) are significantly associated ($p < 0.10$). The results show that all three disclosure subindexes for external capital are significantly associated. Information intermediaries refer to corporate voluntary disclosure when evaluating internal capital. Subindexes for internal capital in press releases and purchase price allocations are not significantly associated. Disclosure subindexes relative to human capital are not significantly associated, too. The credibility of corporate voluntary disclosure is enhanced by disclosure by information intermediaries and by subsequent corporate mandatory disclosure. However, the results depend on the type of intellectual capital considered.

Our research design is subject to several limitations. We selected the mandatory and voluntary disclosure and disclosure by information intermediaries about the largest U.S. and European business combinations as our sample. It is not clear whether the results are generalizable to other disclosure events. Another concern is related to the content analysis methodology. Its results are affected by reliability and validity issues.

However, we believe that the investigation of information dissemination and the closely related issue of disclosure credibility are of interest to accountants, and for stakeholders and standard setters.

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Appendix 1: Category system of the study (in English)

Appendix 1		
Category system of the study (in English)		
Internal Capital	External Capital	Human Capital
based in	analyst meeting	absenteeism
branch	analyst report	apprenticeship
capacity	backlog	career
collaborative research	bargaining power	commitment
communication	brand	compensation
concession	client	corporate culture
copyright	clientele	creativity
corporate information system	commercialization	developer
corporate structure	company name	dismissal
database	consignment	education
distribution	contractor	employ
distribution channel	customer	employee
distribution network	customer base	employee satisfaction
efficiency	customer loyalty	employer
factory	delivery	employment contract
formulation	distributor	entrepreneurial spirit
headquarters	export	expert
incorporation	family-owned enterprise	expert knowledge
infrastructure	franchise	expertise
innovation	hallmark	full time
integration	import	incentive system
intellectual property	initial public offering	job cut
labor market	investor conference	job tenure
license	investor relations	jobs
licensing agreement	key account	know-how
location	label	labor union
media coverage	launch	layoff
new product	listing on the stock exchange	management experience
organization	listings	manager
organizational structure	logo	motivation
patent	major customer	new hire
plant	management shares	part-time
process cycle	marketing	pension
product pipeline	merchandise	personnel
prototype	negotiating power	qualification
quality assurance	new customer	recruiting
quality management	ownership structure	remuneration
R&D	price policy	researcher
reorganization	procurement	salary

restructuring
royalty
site
subsidiary
technology
trade secret
web presence
work environment

provision
purchasing
quotation
reputation
roadshow
sales channel
share buyback
share option
share repurchase
shareholder concern
shareholder structure
shareholder support
stock market valuation
stock option
subcontractor
subscription right
supplier
supply
supply chain
trade name
trademark
vendor
widely held stock

scientist
skills
staff
team
training
wages
work climate
workforce

Table 1: Purchase price allocations, press releases, and news articles related to M&A transactions

Table 1				
Purchase price allocations, press releases, and news articles related to M&A transactions				
Region	Transactions	Purchase price allocations	Press releases	News articles
United States	50	50	47	1376
Europe	50	50	47	1265
Both regions	100	100	94	2641
Average number of words per document		1027	2226	498

Notes: The table is based on largest M&A transactions (by deal value) of U.S. acquirer firms completed between July 1st, 2001 and December 31st, 2008 and of European acquirer firms completed between January 1st, 2005 and December 31st, 2008. The M&A transactions are retrieved from the ZEPHYR database on June 30, 2009. Purchase price allocations have to be published not later than one year after the completion of the M&A transaction in the notes to the financial statements. Press releases commenting on the M&A transactions are normally published at announcement date, news articles considered are published between date of announcement and 1 week after.

Table 2: Items in the disclosure index

Table 2		
Items in the disclosure index		
Category	Items	%
TOT	156	100
INT	47	30.13
EXT	62	39.74
HC	47	30.13

Notes:

(1) The table reports the number of items included in each category of the disclosure index.

(2) INT: Internal Capital EXT: External Capital HC: Human Capital.

Table 3: Descriptive statistics for purchase price allocations, press releases and news articles

Table 3									
Descriptive statistics for purchase price allocations, press releases and news articles									
	Purchase price allocations (PPA_TOT)			Press releases (PR_TOT)			News articles (NA_TOT)		
	United States	Europe	Both regions	United States	Europe	Both regions	United States	Europe	Both regions
Mean	0.6939	0.7675	0.7307	0.6190	0.7126	0.6659	0.5212	0.3979	0.4596
Median	0.5328	0.6392	0.5775	0.5555	0.6980	0.6226	0.4994	0.3985	0.4041
Minimum	0	0	0	0	0	0	0	0.0925	0
Maximum	2.0700	2.8400	2.840	1.7310	2.6428	0.2.6428	1.3760	0.8976	1.3760
S.D.	0.5286	0.6655	0.5991	0.3710	0.5230	0.4534	0.2951	0.1936	0.2559
Kurtosis	0.778	1.648	1.597	0.864	3.717	3.890	0.132	0.159	0.649
Skewness	1.135	1.250	1.252	0.868	1.567	1.497	0.372	0.632	0.685

Notes:

(1) Purchase price allocation index (PPA_TOT) is the disclosure score on intangibles based upon content analysis of the purchase price allocation documents. It is the total number of words related to intangibles communicated by the company in the purchase price allocation documents in proportion to the total amount of words of the document (in percent).

(2) Press releases index (PR_TOT) is the disclosure score on intangibles based upon content analysis of the press releases at announcement date made by acquirer firms. It is the total number of words related to intangibles communicated by the company in the press releases in proportion to the total amount of words of the document (in percent).

(3) News articles index (NA_TOT) is the disclosure score on intangibles based upon content analysis of the news articles published between 1 week before the date of announcement and 1 week after by business press. It is the total number of words related to intangibles communicated by the information intermediaries in the news articles in proportion to the total amount of words of the documents (in percent).

Table 4: Descriptive statistics for disclosure subcategories for purchase price allocations, press releases and news articles

Table 4									
Descriptive statistics for disclosure subcategories for purchase price allocations, press releases and news articles									
	Purchase Price Allocation			Press releases			News articles		
United States	PPA_INT	PPA_EXT	PPA_HC	PR_INT	PR_EXT	PR_HC	NA_INT	NA_EXT	NA_HC
Mean	0.2386	0.3140	0.1413	0.2958	0.2069	0.1164	0.1915	0.2164	0.1133
Median	0.1858	0.2037	0.1145	0.	0.0027	0.1099	0.1754	0.1645	0.0828
Minimum	0	0	0	0	0	0	0	0	0
Maximum	0.9200	1.6300	0.7600	1.1287	0.7572	0.4677	0.5266	0.8499	0.4231
S.D.	0.2212	0.3880	0.1524	0.2436	0.1627	0.0915	0.1164	0.1811	0.1056
Kurtosis	0.923	3.350	4.433	2.999	2.336	3.912	1.056	1.709	1.573
Skewness	1.077	1.798	1.679	1.493	1.490	1.473	0.751	1.220	1.408
	Purchase Price Allocation			Press releases			News articles		
Europe	PPA_INT	PPA_EXT	PPA_HC	PR_INT	PR_EXT	PR_HC	NA_INT	NA_EXT	NA_HC
Mean	0.2594	0.4052	0.1028	0.3520	0.2469	0.1138	0.1608	0.1524	0.0846
Median	0.1642	0.2219	0	0.3238	0.1668	0.0997	0.1400	0.1165	0.0583
Minimum	0	0	0	0	0	0	0	0	0
Maximum	1.3900	2.7500	0.4700	1.6667	1.6839	0.5263	0.7008	0.6875	0.3555
S.D.	0.3223	0.5364	0.1393	0.3377	0.2882	0.1175	0.1129	0.1245	0.0777
Kurtosis	3.094	6.591	0.505	6.573	12.715	3.161	9.721	5.812	1.750
Skewness	1.786	0.662	1.243	2.111	2.979	1.674	0.662	1.870	1.238
	Purchase Price Allocation			Press releases			News articles		
Both regions	PPA_INT	PPA_EXT	PPA_HC	PR_INT	PR_EXT	PR_HC	NA_INT	NA_EXT	NA_HC
Mean	0.2490	0.3596	0.1221	0.3239	0.2269	0.1151	0.1762	0.1844	0.0989
Median	0.1755	0.2112	0.0865	0.2813	0.1669	0.1058	0.1659	0.1193	0.0771
Minimum	0	0	0	0	0	0	0	0	0
Maximum	1.3900	2.7500	0.7600	1.6667	1.6839	0.5263	0.7008	0.8499	0.4231
S.D.	0.2751	0.4680	0.1465	0.2942	0.2336	0.1048	0.1151	0.1579	0.0934
Kurtosis	3.392	6.719	2.789	6.623	15.507	3.454	4.244	3.100	2.198
Skewness	1.703	2.216	1.469	2.046	3.084	1.609	1.484	1.549	1.470

Notes:

(1) Purchase price allocation's subcategory indexes are the disclosure score on internal capital related intangibles (PPA_INT), external capital related intangibles (PPA_EXT) and human capital related intangibles (PPA_HC) based upon content analysis of the purchase price allocation documents. Subindexes are the total number of words related to intangibles in the subcategory communicated by the company in the purchase price allocation documents in proportion to the total amount of words of the document (in percent).

(2) Press release's subcategory indexes are the disclosure score on internal capital related intangibles (PR_INT), external capital related intangibles (PR_EXT) and human capital related intangibles (PR_HC) based upon content analysis of the press releases at announcement date made by acquirer firms. Subindexes are the total number of words related to intangibles in the subcategory communicated by the company in the press releases in proportion to the total amount of words of the document (in percent).

(3) News article's subcategory indexes are the disclosure score on internal capital related intangibles (NA_INT), external capital related intangibles (NA_EXT) and human capital related intangibles (NA_HC) based upon content analysis of the news articles published between 1 week before the date of announcement and 1 week after by business press. Subindexes are the total number of words related to intangibles in the subcategory communicated by the information intermediaries in the news articles in proportion to the total amount of words of the document (in percent).

Table 5: Welch test for press releases and purchase price allocations

Table 5 Welch test for press releases and purchase price allocations									
	United States			Europe			Both regions		
	Press releases	Purchase Price Allocation	Welch-Test	Press releases	Purchase Price Allocation	Welch-Test	Press releases	Purchase Price Allocation	Welch-Test
TOT	0.6191	0.6940	-0.820	0.7126	0.7680	-0.462	0.6659	0.7310	-1.084
INT	0.2958	0.2384	1.226	0.3520	0.2598	1.389	0.3239	0.2491	2.248**
EXT	0.2069	0.3140	-1.810*	0.2469	0.4048	-1.841*	0.2269	0.3594	-3.078***
HC	0.1164	0.1416	-1.004	0.1138	0.1026	0.432	0.1151	0.1221	-0.542

Notes:

(1) Press releases index (PR_TOT) is the disclosure score on intangible assets based upon content analysis of the press releases at announcement date made by acquirer firms, in percent. Press release's subcategory indexes are the disclosure score on internal capital related intangibles (PR_INT), external capital related intangibles (PR_EXT) and human capital related intangibles (PR_HC), in percent.

(2) Purchase price allocation index (PPA_TOT) is the disclosure score on intangibles based upon content analysis of the purchase price allocation documents, in percent. Purchase price allocation's subcategory indexes are the disclosure score on internal capital related intangibles (PPA_INT), external capital related intangible assets (PPA_EXT) and human capital related intangibles (PPA_HC), in percent.

$$T = \frac{\bar{X} - \bar{Y}}{\sqrt{\frac{S_x^2}{n} + \frac{S_y^2}{m}}}$$

3) Welch t-test with unequal sample sizes and unequal variances:

(4) Test problem: $H_0: \mu_x = \mu_y$; $H_1: \mu_x \neq \mu_y$; H_0 is rejected, if $|T| > u_{1-\alpha/2}$; $u_{0,90}=1,645$; $u_{0,95}=1,96$; $u_{0,99}=2,576$

(5) Null hypothesis is rejected for * $\alpha=10\%$, ** $\alpha=5\%$, *** $\alpha=1\%$

Table 6: Welch test for press releases and news articles

Table 6									
Welch test for press releases and news articles									
	United States			Europe			Both regions		
	Press releases	News articles	Welch-Test	Press releases	News articles	Welch-Test	Press releases	News articles	Welch-Test
TOT	0.6191	0.5212	1.447	0.7126	0.3979	3.925 ^{***}	0.6659	0.4596	5.097 ^{***}
INT	0.2958	0.1915	2.691 ^{***}	0.3520	0.1608	3.731 ^{***}	0.3239	0.1762	1.593
EXT	0.2069	0.2164	-0.275	0.2469	0.1524	2.094 ^{**}	0.2269	0.1844	1.870 [*]
HC	0.1164	0.1133	0.156	0.1138	0.0846	1.448	0.1151	0.0989	5.743 ^{***}

Notes:

(1) Press releases index (PR_TOT) is the disclosure score on intangibles based upon content analysis of the press releases at announcement date made by acquirer firms, in percent. Press release's subcategory indexes are the disclosure score on internal capital related intangibles (PR_INT), external capital related intangible assets (PR_EXT) and human capital related intangibles (PR_HC), in percent.

(2) News articles index (NA_TOT) is the disclosure score on intangibles based upon content analysis of the news articles published between 1 week before the date of announcement and 1 week after by business press, in percent. News article's subcategory indexes (NA_TOT) are the disclosure score on internal capital related intangibles (NA_INT), external capital related intangibles (NA_EXT) and human capital related intangibles (NA_HC), in percent.

$$T = \frac{\bar{X} - \bar{Y}}{\sqrt{\frac{S_x^2}{n} + \frac{S_y^2}{m}}}$$

(3) Welch t-test with unequal sample sizes and unequal variances:

(4) Test problem: $H_0: \mu_x = \mu_y$; $H_1: \mu_x \neq \mu_y$; H_0 is rejected, if $|T| > u_{1-\alpha/2}$; $u_{0,90}=1,645$; $u_{0,95}=1,96$; $u_{0,99}=2,576$

(5) Null hypothesis is rejected for * $\alpha=10\%$, ** $\alpha=5\%$, *** $\alpha=1\%$

Table 7: Correlations for total disclosure for purchase price allocations, press releases and news articles

Table 8									
Correlations for total disclosure for purchase price allocations, press releases and news articles									
	United States			Europe			Both regions		
	PPA_TOT	PR_TOT	NA_TOT	PPA_TOT	PR_TOT	NA_TOT	PPA_TOT	PR_TOT	NA_TOT
PPA_TOT	1.000			1.000			1.000		
PR_TOT	0.322 (0.014)	1.000		-0.131 (0.189)	1.000		0.067 (0.259)	1.000	
NA_TOT	0.389 (0.003)	0.128 (0.195)	1.000	0.168 (0.130)	0.271 (0.032)	1.000	0.279 (0.003)	0.168 (0.053)	1.000

Notes:

(1) Purchase price allocation index (PPA_TOT) is the disclosure score on intangibles based upon content analysis of the purchase price allocation documents.

(2) Press releases index (PR_TOT) is the disclosure score on intangible assets based upon content analysis of the press releases at announcement date made by acquirer firms.

(3) News articles index (NA_TOT) is the disclosure score on intangibles based upon content analysis of the news articles published between 1 week before the date of announcement and 1 week after by business press.

(4) The table reports the Spearman (Pearson) correlations below (above) the diagonal, related p-values for 1-sided tests are given in brackets below.

Table 8: Correlations for disclosure subcategories for purchase price allocations, press releases and news articles for both regions

Table 8									
Correlations for disclosure subcategories for purchase price allocations, press releases and news articles for both regions									
Both regions	Purchase Price Allocation			Press releases			News articles		
	EXT	INT	HC	EXT	INT	HC	EXT	INT	HC
PPA_EXT	1.000								
PPA_INT	0.123 (0.119)	1.000							
PPA_HC	0.212 (0.020)	0.248 (0.008)	1.000						
PR_EXT	0.175 (0.046)	0.064 (0.269)	0.098 (0.174)	1.000					
PR_INT	0.093 (0.185)	0.052 (0.309)	0.020 (0.423)	0.322 (0.001)	1.000				
PR_HC	0.021 (0.420)	-0.027 (0.399)	0.071 (0.247)	0.266 (0.005)	0.295 (0.002)	1.000			
NA_EXT	0.231 (0.013)	0.222 (0.016)	0.222 (0.016)	0.277 (0.003)	-0.103 (0.162)	0.039 (0.354)	1.000		
NA_INT	-0.035 (0.370)	0.201 (0.026)	0.090 (0.195)	0.145 (0.082)	0.390 (0.000)	0.159 (0.063)	0.262 (0.005)	1.000	
NA_HC	-0.006 (0.476)	0.162 (0.060)	0.095 (0.181)	-0.019 (0.427)	0.025 (0.406)	0.059 (0.287)	0.267 (0.005)	0.380 (0.000)	1.000

Notes:

(1) Purchase price allocation's subcategory indexes are the disclosure score on internal capital related intangibles (PR_INT), external capital related intangible assets (PR_EXT) and human capital related intangibles (PR_HC).

(2) Press release's subcategory indexes are the disclosure score on internal capital related intangibles (PR_INT), external capital related intangible assets (PR_EXT) and human capital related intangibles (PR_HC).

(3) News article's subcategory indexes are the disclosure score on internal capital related intangibles (NA_INT), external capital related intangibles (NA_EXT) and human capital related intangibles (NA_HC).

(4) The table reports the Spearman (Pearson) correlations below (above) the diagonal, related p-values for 1-sided tests are given in brackets below.

Figure 1: Information dissemination

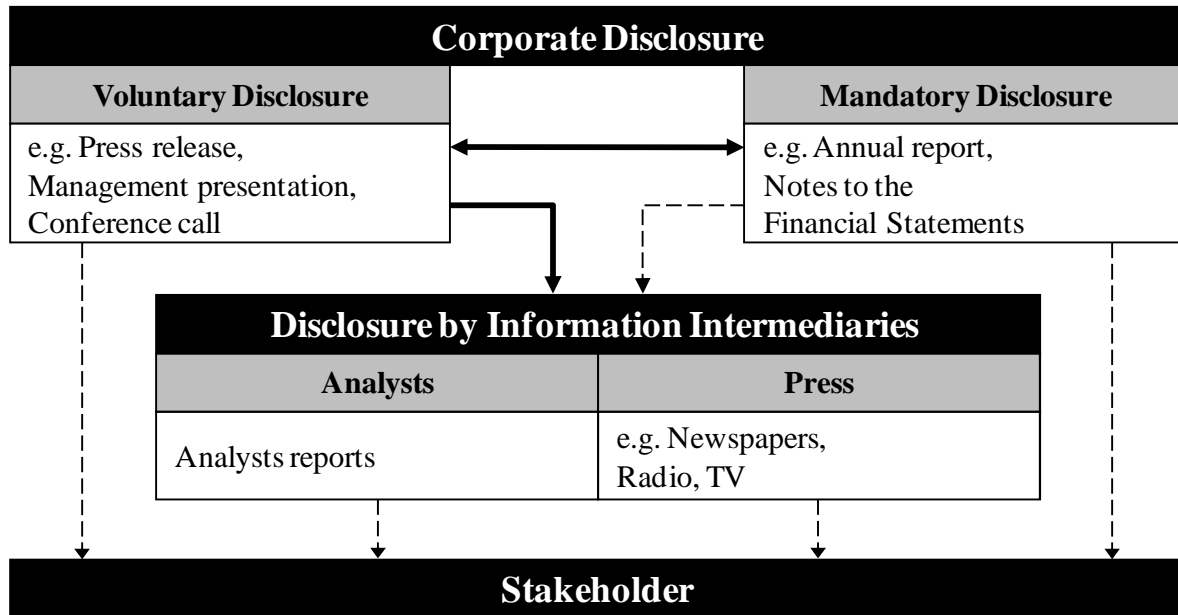


Figure 2: Timeline

