International Information Transfers: An Analysis of European Companies

Paulo Alves
p.alves@lancaster.ac.uk

Peter Pope
p.pope@lancaster.ac.uk

Steve Young
s.young@lancaster.ac.uk

Lancaster University, Management School

First version: March 2007

This version: November 2007

Abstract

Prior literature has documented that accounting information releases contain price sensitive information not only about the announcing company but also about non-announcing companies in the same sector. While evidence of accounting information transfers phenomena have been widely studied at the domestic level, little evidence currently exists concerning the incidence of such transfers across international boundaries. This paper extends current literature by focusing on cross-European accounting information transfers associated with profit warnings. Our results indicate that the information transfer effects exist at the international level. Additional tests examine how the incidence and magnitude of cross-border information transfers varies according to the quality of domestic accounting and information environments.

Keywords: information transfer; announcements; profit warnings.

International Information Transfers: An Analysis of European Companies

1. Introduction

This paper investigates the effect of profit warnings on the share prices of non-announcing similar companies and spread across a large set of European countries. Results reported are consistent with prior research focusing on information transfers within a country and existent but limited evidence at the cross-country level.

Stock prices react to the arrival of new information. Information affecting prices can potentially arise from an infinite number of sources, but it can be broadly classified into market information, industry information and firm-specific information. In this paper, we are interested in firm-specific information that spreads across a set of similar companies, i.e. information reported by one company that impacts stock prices of similar companies. This phenomenon is known as information transfer (IT) and it has been widely documented in both the accounting and finance literatures. The economic rationale supporting IT can be intuitively explained with an example: imagine an industry that has two companies and a constant demand for its product. In such a scenario if one of the companies reports a decrease in sales, investors will automatically interpret this information as an increase in sales of the other company.

Investors collect and analyse as much relevant information as possible to the extent that the benefits of collecting and processing the information exceed the inherent costs. The identification of commonalities between companies becomes particularly relevant when it allows information to be inferred from one company to the other and it results in information being "transferred" from one company to the other. The IT phenomenon can result in two different effects: contagion or competition. A contagion effect occurs when the signal of the effect on the announcing and non-announcing company are the same, e.g. a company announces a systematic decrease in the demand for their main product in the industry. A competitive effect is present when the stock price reaction of the announcing and non-

announcing companies is of opposite signs, as in the example described earlier of an industry with two companies and a constant demand.

Evidence on accounting-related ITs is important because it indicates that investors consider information from a range of alternative sources when determining an investment strategy for a particular firm (Dietrich 1989). Prior research has focused on accounting transfers associated with earnings announcements (e.g. Clinch and Sinclair 1987; Firth 1976; Foster 1981; Freeman and Tse 1992; Han and Wild 1990), management earnings forecasts (Baginski 1987; Han et al. 1989; Pyo and Lustgarten 1990), profit warnings (Tse and Tucker 2006), merger proposals (Eckbo 1983) and dividend initiations (Firth 1996a).

The scope of prior research has been limited almost exclusively to IT between domestic firms. However, declining barriers to international trade and greater capital mobility mean that firms are conducting more of their business across national boundaries. Investors and analysts follow companies on this global approach and as sectors become more globalised, information released by firms in one country is becoming increasingly relevant for firms domiciled in other countries. The following example illustrates this effect. On 23 June 2003, Dutch brewing giant Heineken announced that half-yearly earnings growth would remain flat. Not only did the news prompt a 12 percent drop in Heineken's share price; it also caused shares in Interbrew (Belgium) and Carlsberg (Denmark) to fall by four and five percent, respectively (*Financial Times,* 24 June 2003). Clearly, investors and analysts considered news about Heineken's performance useful in updating expectations for other firms in the global brewing sector. Similarly, an increasing number of firms are choosing international peer groups to carry out their performance benchmarking activities. For example, mining firm Anglo American PLC determines executive directors' bonuses by benchmarking earnings performance against a portfolio of twelve other mining stocks, the majority of which are domiciled and listed outside the UK (Anglo American plc Annual Report 2005, p.28). With firms, analysts and portfolio managers increasingly taking a global stance, the impact of cross-border accounting ITs on equity prices is set to grow.

Although a different issue to the IT topic under study, the comovement of international stock markets is related to our paper. An example of such an effect can be observed around the events of previous stock crashes or financial crises (e.g. the

crash of October 1987 or the collapse of Russian market in the late 90's) that spread across the Globe. The example given of these extreme cases is easy to understand, but the majority of the economies are at least partially open to foreign investment and have economic ties to other countries. This exposes their capital markets to externalities arising from other countries. Economic ties may result in comovement because a country's economy is then exposed to the performance of other countries' economies. A willingness to accept foreign investment can also result in comovement because the performance of the economy is also dependent on the flow of funds associated to the portfolio and investment strategies of foreign investors, which is constrained by the global perspective of their strategy. Research has documented the effects of comovement (e.g. Li 2006; Longin and Solnik 2001) and this is relevant for our study, because it is important to understand these effects and differentiate them from ITs.[1]

While prior research has established evidence of interdependencies among company share prices based on key accounting disclosures such as earnings announcements and profit warnings, these results are confined to within-country effects. At the cross-country level, evidence concerning IT is limited to Firth (1996b), who analyses IT effects between US and UK companies following annual earning announcements. Our study extends cross-country research by focusing on a large set of European countries.

We also extend prior research by focusing on profit warnings. Prior research about ITs arising from profit warnings is limited to Tse and Tucker (2006), which is more concerned with the timing of profit warning releases within an industry. Companies have both legal and economic incentives to release profit warnings as soon as they observe an unforeseen effect that may permanently and significantly affect their financial performance. By definition a profit warning should contain new information and, therefore, it is very likely to have an impact on price.

Early IT research focused mainly on annual earnings announcements and strong IT effects were documented, for instance Firth (1976) documents an IT effect of 50% to 80% of the stock price reaction of the announcing company. Recent

[1] To some extent the use of market adjusted returns mitigates the interaction of these two effects, because in principle market adjusted returns isolate the firm-specific returns from market movements.

research using earnings announcements focuses more on quarterly announcements and IT effects seem to be much less pronounced. Xu (2003) documents a stock price impact of 3% and 0.5% for announcing and non-announcing companies, respectively.

Virtually all the research on IT effects defines similar companies based on the industry classification, we adopt this classification procedure on our main results, but we also present results that define similar companies based on the number of common analysts following and extending Ramanath (2002).

Our paper seeks to determine whether profit warnings have an impact on announcing company stock prices and if they result in an IT effect across national boundaries. The remainder of the paper is organised as follows: The next section assesses the literature reviewed and section three discusses our research design. Section four explores and discusses our empirical results. Finally, section five draws conclusions and establishes the path for future research.

2. Prior research and hypothesis development

The IT phenomenon has attracted significant attention from accounting and finance researchers and results from prior research seem robust and clear: information released by a company is relevant and used by investors when making investment decisions about similar companies. Prior accounting research has mainly focused on earnings announcements and earnings forecasts, but it also covers specific instances in the life cycle of companies (e.g. bankruptcies, Lang and Stulz 1992) or other events that are likely to affect investor's perceptions about a firm's fundamentals (e.g. the impact of a nuclear accident on the electrical sector, Bowen et al. 1983).

Firth's (1976) seminal paper viewed the literature analysing the impact of information releases differently. Rather than focusing on the impact of the announcement on the stock prices of the announcing company itself (e.g. Ball and Brown 1968), he looked at the impact of annual earnings announcements on non-announcing companies in the same industry. Results show evidence of an information spillover to the non-announcing companies resulting in an effect of approximately 50-80% of the announcing company's average price reaction around the information event. Furthermore, the author also finds an increase in the trading volume of non-

announcing companies around the announcement date. Under different frameworks and with different results as to the magnitude of the IT effect, these results have been widely confirmed by subsequent research and extended to other types of announcements and events[2].

Most of the existent research focuses on the US market, with the exceptions of Firth (1976) and Clinch and Sinclair (1987) who investigate the IT effect on the United Kingdom and Australia, respectively. Firth (1996b) is, to our knowledge, the only paper that addresses IT at the cross-country level focusing on the spillover of information from the annual earnings announcements and earnings surprises of US companies to UK companies and vice-versa. Results confirm the existence of IT between these two countries (the effect is greater in the direction of the US to the UK) and the magnitude of such transfers seems to be related to certain firm and industry characteristics such as profitability and company size. A relevant conclusion from Firth (1996b) to our study is that domestic ITs are stronger than the effects captured at the cross-country-level.

The rationale supporting Firth's (1976) work have been applied to other information events, such as management earnings forecasts. Baginski (1987) and Pownall and Waymire (1989) document a relationship between the sign and magnitude of changes in earnings expectations and unexpected returns of similar firms. Ramanath (2002) shows that analysts revise their earnings forecasts for subsequent announcers and that investors under-react to first announcements. These results are at odds with Thomas and Zhang (2006), who conclude that investors overreact to early announcements and correct their position when the company reports its own information. Gonen (2003) finds evidence of an IT effect based on restatements of financial statements, which can be explained by an industry approach to an accounting treatment (e.g. change in an accounting standard relevant to a specific industry), such an effect is stronger when non-announcing companies are of low accounting quality (Gleason et al. 2004). Xu (2003) finds that the magnitude of the IT effect is positively associated with an announcing company's performance.

[2] As to earnings announcements, literature has extended its research to quarterly (e.g. Foster 1981), half-yearly (e.g. Clinch and Sinclair 1987) and pre-earnings announcements (Wasley 2001) with similar conclusions.

Tse and Tucker (2006) document a negative effect of 5% on the stock prices of the announcing company after the release of a profit warning and a decline of 0.3% to 0.5% in the stock price of latter announcing-companies at the moment of the first announcement in the industry. This study provides valuable information for our research. First, profit warnings introduce new information to the market. Second, the IT effect is considerably smaller than early research has documented, but in line with Xu (2003), which combined with Firth's (1996b) findings might indicate difficulties in detecting cross-border IT effects. Anecdotic evidence such as the one presented in the introduction leads us to conclude that an IT effect exists in a cross-country scenario and our main research question is aimed at investigating such an effect.

Prior research also examines subsequent announcements, with the idea that when subsequent announcements occur they contain less new information when compared to early announcements and, therefore, the IT effect should be weaker or non-existent. Foster (1981) finds the opposite, but these results are disputed by Clinch and Sinclair (1987) and Freeman and Tse (1992) who report evidence suggesting that subsequent announcements are less informative. Tse and Tucker (2006) conclude that early announcements speed up subsequent announcements and that the likelihood of a firm being the first announcer increases with size and decreases with the magnitude of bad news.

Pyo and Lustgarten (1990) also test the model used to compute normal returns and conclude that results, although slightly weaker, hold when an industry variable is added to the marker model. This conclusion conflicts with Han et al. (1989) who interestingly conclude that results are very sensitive to the model used to estimate normal returns and when the industry index is added to the market model, directional results do not hold. Han and Wild (1990) test if the limitations of the market model affect results by comparing the IT effect based on a market model and on unexpected earnings. Results indicate that the use of a market model does not affect results or conclusions. Frost (1995) assesses the properties of alternative methods to estimate IT and investigates some of the properties associated with IT, finding that the use of abnormal returns to measure IT tends to overstate the significance of IT due to cross-variation of regression disturbances, suggesting that directly estimating the information signal is more accurate.

Another area into which ITs have developed is the study of IT effects at certain times in the lifecycle of a company. Slovin et al. (1991) study the decision to go private on rival firms. Szewczyck (1992) investigates industry reactions to a companies' security offering. Firth (1996a) analyses if a dividend change affects the valuation and earnings forecasts of same-industry companies. Eckbo (1983) investigates IT resulting from horizontal mergers and, finally, Aharony and Swary (1983) and Lang and Stulz (1992) study the IT around bankruptcy announcements. In general, all these studies document an IT effect around these events.

Other research focuses on specific events such as announcements of bad debt provisions around the south-America crisis (Diaz and McLeay 1996), a nuclear power accident (Bowen et al. 1983), hacker attacks of internet companies (Ettredge and Richardson 2002) and Arthur Andersen's Enron audit failure (Cahan et al. 2006; Chaney and Philipich 2002). Again, an IT effect can be observed as a result of these events.

The vast majority of prior research establishes the link between announcing and similar non-announcing firms using an industry classification and Frost (1995) has found that IT effects are more pronounced in homogeneous and concentrated industries. Pyo and Lustgarten (1990) use the covariance of earnings to identify similar companies and conclude that covariance of earnings is a determinant of IT. This result is consistent with Freeman and Tse (1992) who conclude that the IT effect is more pronounced in industries with higher comovement of accounting data.

Ramanath (2002) makes a first attempt to identify similar companies based on analysts following. The approach followed defines a set of static industries using shared analysts based on IBES analysts following in 1995 (first year in the sample). Ramanath (2002) study is silent on the incremental benefits from such approach. The use of common analysts to identify similar companies is based on the fact that analysts tend to specialise in certain areas of business and, therefore, are in a privileged position to induce an IT effect (Piotroski and Roulstone 2004). We extend this approach in three ways. Firstly, our algorithm determines similar companies based on a dynamic approach, i.e. for each announcement we identify all the companies sharing 20 or more analysts (the mean of the sample is 22 analysts following) in the same year. Secondly, we do not restrict companies to a given analyst based "industry" classification. In other words if both announcing companies A and B

share 20 or more analysts with the non-announcing company C, but do not share any amongst themselves. C will belong to the non-announcing group of both A and B, rather than being assign to just one "industry". Thirdly, we compare the benefits of this approach with the more conventional industry based grouping.

Following the discussion of existent research, we aim our paper at finding evidence supporting the existence of an IT effect at the cross-country level following the release of a profit warning. Profit warnings are expected to strongly affect the stock prices of the announcing company itself and, due to the negative content of a profit warning, this effect should be negative. Furthermore, we also expect to observe an IT effect around a profit warning announcement. The IT effect should be weaker than the effect on the announcing company.

3. Sample selection and research design

Theory supporting IT literature predicts that market participants will learn from a company's information signal and use this knowledge to revise their investment decisions concerning similar companies. This investment behaviour will create two parallel information flows: one affecting the information environment of the announcing company and another one affecting the information environment of similar non-announcing companies (IT). These information flows should move prices closer to fundamentals and should be observed in stock returns.

Our research analysis is based on observing the behaviour of prices around the announcement event. For each profit warning in our sample, we identify all similar non-announcing companies and we measure market adjusted returns for the days around the announcement and test if they are significantly different from zero[3]. We complement our analyses using absolute market adjusted returns, cumulative market adjusted returns, and absolute cumulative market adjusted returns[4].

Market adjusted returns (*ADR*) for company *i* in day *t*, are calculated for both announcing and non-announcing companies using Equation (1), where *RC* and *RM*

[3] As a sensitive analysis, not reported, we also used raw returns and abnormal returns using a CAPM approach to determine the estimators.
[4] We also use squared market adjusted returns in non-tabulated results.

are company returns and market returns, respectively. *RM* is computed using Equation (2), *n* representing the number of companies in our sample. Absolute market adjusted returns (*AADR)* are expressed by Equation (3).

$$ADR_{i,t} = RC_{i,t} - RM_t \tag{1}$$

$$RM_t = \sum_{i=1}^{n} \left(RC_{i,t} \times \frac{MV_{i,t}}{\sum_{i=1}^{n} MV_{i,t}} \right) \tag{2}$$

$$AADR_{i,t} = \left| ADR_{i,t} \right| \tag{3}$$

In our analysis we also analyse the behaviour of stock returns over a cumulative window of 2 and 3 days[5] around the announcement, [t, t+1] and [t-1, t+1], respectively, where *t* is the announcing day. Cumulative market adjusted returns (*CADRm*) are measured as in Equation (4), *m* is the number of days in the window, $m \in (2, 3)$. Equation (5) yields absolute cumulative market adjusted returns (*CAADRm*).

$$CADRm_{i,t} = \prod_{j=1}^{2-m} \left(1 + ADR_{i,t+j}\right) - 1 \tag{4}$$

$$CAADRm_{i,t} = \left| CADRm_{i,t} \right| \tag{5}$$

In our framework, we observe an IT effect if the average stock returns across all non-announcing companies is statistically different from zero. We apply different statistical techniques to infer the statistical significance based on the measure being tested (Yadav 1992). A *t*-test was used to test the significance of when *ADR* and *CADRm* are different from zero (Campbell et al. 1997; Sheskin 2004).

[5] Results using a 3 days window are not tabulated in the paper.

To test the significance of *AADR* and *CAADRm* we employ a different test. By definition *AADR* and *CAADRm* have a lower limit of zero and therefore, they are bound to be different from zero. The test we apply is based on May (1971) and Yadav (1992) and can be intuitively explained as follows: For each day *t* in the announcement window and for every company (*i*) in the sample, we computed the ratio of the $AADR_{i,t}$ to the average of $AADR_{i,t}$ over an estimation period of 125 days , starting 150 days before and ending 25 days before day *t*, Equation (6). The estimated $MAADR_{i,t}$ should be an unbiased estimator of *normal* absolute market adjusted returns and the ratio should then have a value of one, if the IT effect is not strong enough to affect the returns of non-announcing companies. We then apply a *z*-test to test the significance of the difference between the value of the computed ratio and one.[6]

$$MAADR_{i,t} = \frac{AADR_{i,t}}{\frac{\sum_{z=150}^{25} AADR_{i,t-z}}{125}} \qquad (6)$$

Our study looks at profit warnings by European companies. Profit warnings reflect unexpected changes in the business environment that strongly affect the financial performance of a company. One advantage of profit warnings over other types of information events is that they are less likely to cluster in time. Other types of information events, such as annual or interim reports are often seasonal, with a large number of companies releasing information at the same time[7]. This said one should still be made aware that profit warnings can happen concurrently with other types of announcements and it is impossible to fully disentangle the effects.

Our decision to focus on European companies reflects an attempt to keep institutional factors as constant as possible. Cross-country studies are often affected

[6] A similar methodology is used to test the significance of *CAADRm*, where both the numerator and the denominator are determined based on periods of *m* days, $m \in (2, 3)$.

[7] It is also worth noticing that the evidence suggests that a significant component of the content of an annual report is already incorporated in prices at the time of the announcement (e.g. Ball and Brown 1968)

by a significant number of country-level effects that are hard or impossible to identify and control for. To some extent, the actions of the European Commission regarding harmonisation have mitigated some of these effects and cultural ties within Europe are relatively stable and common, when compared with other areas across the globe.

We start by identifying all European companies included in the *JCF* proprietary international industry portfolios, with market value available for at least one year[8]. A company is classified as European if it is primarily listed on a European Stock market, according to the *JCF* classification. *JCF* portfolios include 9,348 companies with 2,428 profit warning issued during our sample time-window[9]. The IT effect is measured by the magnitude of the price reaction around the release of a profit warning and for that we need data on stock price returns, which were retrieved from *Datastream*.[10] For all the European countries identified in *JCF*, we then download the lists of constituents from *Datastream* (with market value available for at least one of the years in the sample) and we proceed with a comprehensive matching procedure that included combinations of all common identifiers available.

Our algorithm to identify similar companies based on common analysts identifies all analysts following a company and then for each company-analyst it identifies all the companies followed by that analyst. The result is a database that for each analyst following a company has all the other companies followed by the same analyst. We then count the number of common analysts between each pair of firms and we keep those with 20 or more common analysts. This procedure significantly constrains our sample, creating a bias towards large companies. However, we will show that this classification produces very different results from those obtained by trimming the sample to include only the largest companies, reinforcing the idea that it is not a size driven effect, but an analyst one. This approach to identify similar

[8] We consider market value to be a basic item and its inexistence is indicative of a poor quality coverage for a given firm.

[9] It is important to note that *JCF* only retains the date of the last profit warning made that year. In the unlikely event of a company issuing several profit warnings during a year, only the date of the most recent one is kept.

[10] The use of two different data sources poses the problem of matching companies across databases, which can severely affect final sample composition (Alves et al. 2007). Our matching procedure made use of all common identifiers and the problem of imperfect matching is mitigated in this study as a result of our focus on large companies. *JCF* covers only a subset of companies for each country, which tend to be representative of a given industry in a given country.

companies also imposes the problem of using a third database (*IBES*), which results in some companies being drop for matching reasons.

Our matched sample includes 5,422 companies and after trimming the final sample comprises 5.125 companies (424 if using common analysts to identify similar companies)[11] Table 1 presents sample composition per country and industry, respectively. The same matched sample includes 1,713 profit warnings for our European sample and for the period 1995-2006 (Table 2, Panels A and B). We delete profit warnings that: a) have incomplete data (44); b) that are clustered within 4 days of interval (408); and c) profit warnings of companies in countries or industries with less than three observations. These deletions result in a sample with 1,253 profit warnings issued by 856 announcing-companies. The number of profit warnings in our sample is reduce to 348 (207 announcing-companies) when adopting an analysts based definition of similar company. As to the non-announcing companies, 121,136 company-announcement-years were used corresponding to 5,175 companies or 636 company-announcement-years and 141 non-announcing companies when focusing on similar companies based on common analysts.

Table 2 also shows that the number of profit warning was higher around the years 2001-2002 and that the more active European markets seem to dominate the sample, with the UK presenting almost 45% of the total number of profit warnings (Table 1). Finally, we were unable to distinguish an industry pattern based on the distribution of profit warnings amongst the different industries.

We consider the company releasing a profit warning as the announcing company, for that particular event, and all the remaining companies in the same industry-year are then classified as non-announcing companies for the same event. Non-announcing companies are all companies included in the same *JCF* international industry portfolio, regardless of if they are announcing companies in another moment in time[12]. An announcing company can be classified as non-announcing if it belongs to the same year-industry of another announcing company. This creates the problem

[11] We trimmed the matched sample in order to eliminate: a) companies with missing data; b) insufficient listing period. We require companies to be listed for at least two years, one year when the announcement occurs and one year beforehand for estimation purposes; and c) countries or industries with less than three companies.

[12] When using an analyst based approach, non-announcing companies are those who that the announcement year shared 20 or more analysts with the announcing company.

of multiple announcements, companies that report in the same four days window cannot be considered as a non-announcing company with regard to others, i.e. if companies A and B report in two consecutive days company B is not included in the group of non-announcing companies for A and A is not is not included in the group of non-announcing companies for B. We also force non-announcing companies to be of a different country from the announcement company, because the focus of our paper is to look for evidence at the cross-country level.

4. Empirical tests and discussion of results

Our empirical analysis is based on two different approaches. We first extend prior research by documenting evidence on IT effects based on a comprehensive set of analyses focusing on country level, cross-country level, year, size of the announcing company and magnitude of the impact of the announcement on the announcing company itself. We then extend prior research by trying to explain the factors driving the IT effects by running a set of multivariate analysis. All our analyses are based on both samples using industry classification and common analysts to identify similar companies.

4.1. Univariate analysis

A Profit warning sends a relatively strong information signal to the market and a prompt price reaction is observed for the announcing company and due to the nature of the announcements a negative signal is expected. Table 3[13], Panel A, shows evidence of an average return of -7.3% on the day of the announcement (ADR0) and also some evidence of a post announcement reaction with cumulative returns for the period [0; 1] of -8.7% (CADR2).

When focusing on the non-announcing companies, results in Table 3, Panel A, provide relative evidence to support an information transfer effect. On average non-announcing companies experience a price reaction of -0.1% surrounding the

[13] Table 3 presents the descriptive statistics for our univariate analysis. At this stage our main objective is to present a brief analysis and description of the IT effects and therefore we did not apply any trimming or outlier deletion to the sample.

announcement. The documented effect is significantly lower than those reported in the early literature, but very close to those reported by Xu (2003) and Tse and Tucker (2006). The fact that we focus on a larger sample and also the fact that we focus on cross-country effects are two potential reasons for the low level of IT documented in this study. Results on ADR0 for the non-announcing companies have to be analysed with due care. The IT can result in two effects with opposite directions (competitive and contagion), by focusing on ADR0, we are looking at an average of those two effects. The variable AADR0 focus on the magnitude of the effect rather on the signal, the IT effect is of 1.8% (2.6% for the two days window). Together these results indicate that both competitive and contagion effects are present in our sample.

Stock returns around the announcement event are on average considerably higher for the announcing firms, as expected and for all return measures used. However, the extremes (minimum and maximum) are mostly larger for the non-announcing firms. We do not have an explanation for this finding.

Table 3, Panel B, uses common analysts to identify similar companies, under the rationale that analysts are in a favourable position to conduct IT. Under this construction the IT effect is stronger (-0.2%). In order to identify similar companies we had to impose a constraint of twenty or more common analysts (which is very close to the average number of analyst following). This selection imposes a strong constraint on sample size, biasing our sample towards large companies and we are cautious on making generalizations based on these results. However, non-tabulated results imposing a similar trimming based on market value, produces results weaker than those in Table 3, Panel A. This might be indicative that the stronger effect is in fact driven by analysts and not by the size-bias.

Based on Firth (1996b), we expect cross-country IT to be weaker than at country level, Table 4, Panel A, present results at the country level and we can see that we can detect an IT effect for most of the countries either. It is not our objective to explain the cross-country variation, but we should notice that Netherlands, Spain and Switzerland present on average positive IT effects and that Poland presents the strongest impact with -0.9%. When using common analysts to identify similar companies, Table 4, Panel B, results are considerably stronger, although significant for a smaller subset of countries, which can be justified by the fact that analysts tend to specialise within a country. We do not have an explanation for the impressive result

presented by Sweden (1.7%). Table 5 compares the difference between cross-country and country-level effects, which as expected are stronger for the country-level.

Table 6 presents the time dimension of the impact of profit warnings and their IT effect. In Panel A and not surprisingly, the number and effect of profit warnings on the announcing companies is higher around the period 2000-2003, around the burst of the dotcom bubble and subsequent financial scandals. The number of profit warnings remains higher after that period, most likely due to changes in the institutional settings affecting disclosures. As to the IT effect, and despite the inexistence of a pattern, one can see again that IT effects tend to be significant around the years 2001-2003. Again, using common analysts to identify similar companies seems to result in stronger IT effects (Panel B).

The next steps represent different attempts to capture and understand some of the mechanics of the IT process. We start by classifying announcing companies based on the signal of the price reaction around the announcement. Profit warnings are by nature a bad-news announcement and, therefore, we deleted from our sample profit warnings with a positive impact on the announcing company itself.[14] Non-announcing companies where then classified according to their reaction (positive versus negative) to the announcement. Separating the positive and negative IT effects corresponds to analysing separately the contagion and competitive effects. Table 7 and it clearly shows that the low level of ADR0 in previous tables is due to the aggregation of these two effects with opposite signs. "Negative" profit warning on average result in an impact of -10.4% on the announcement day and -11.7% on the two days window [0; 1]. As to the non-announcing companies, 33,825 experience a competitive effect and present a positive reaction of 1.9%, while 40,004 companies experience a negative effect of -1.7% (contagion).

We also look for evidence to see if the magnitude of the IT effect is dependant on the magnitude of the impact of the profit warning on the announcing

[14] The positive signal on the announcement day might result from the content of the announcement not being as negative as predicted by market participants, in which case the negative anticipation of the market should be followed by a positive correction with the announcement. Non-tabulated results show some evidence to support a negative pre-announcement market reaction, as the announcing companies experience a negative return prior to the event day. Non-tabulated results also show that the majority of profit warnings has a negative impact and of stronger magnitude and there is no evidence of IT effects associated to "positive" profit warnings on the announcement day.

company itself. We expect that the stronger the announcement the stronger the IT effect and results show limited evidence of such an effect. In Table 8, Panel A, we rank announcing companies by the magnitude of absolute return on the announcement day and non-announcing companies are then classified according to the classification of the matching announcing company. The impact on the announcing company itself varies from -0.1% to -25.6%. It is worth noticing that the average absolute return in the highest quintile is remarkably high, i.e. 20% of the announcing companies present average absolute stock returns of a quarter of their price as a result of a profit warning announcements. When focusing on ADR0 and CADR2, we find very limited evidence of a relationship between the impact of the profit warning on the price of the announcing company and the IT effect that it induces. However, when focusing on the absolute measures the relationship seems to be clear and with the hypothesised direction varying from 1.5% to 2.1% and 2.3% to 3% for AADR0 and CAADR2, respectively. When focusing on the sample based on common analysts (Panel B) it seems that the magnitude of the announcement does not affect the IT effect. This might be indicative that analysts are selective in their information processing, indicating that they can distinguish industry and firm-specific information, i.e. the content of the announcement is more relevant than the magnitude on the announcing company.

Our last univariate analysis focuses on the effect of the size of the announcement company. We do not have a prediction to this relationship. On one hand, we expect larger firms to lead the market and, therefore, produce stronger IT effects, but on the other hand smaller firms tend to have a worst information environment and, therefore, we expect an information signal to have a stronger impact. Table 9 shows that smaller announcing-companies present larger stock returns around the announcement. Several factors support these findings. First, the information environment of a smaller company is usually less complex. The complexity of information creates more opportunities for “finding valuable information” and, therefore, market agents are willing and need to have better skills to examine the information more carefully, thus improving the information environment. This said, smaller firms tend to have fewer investors and analysts following them (Bhushan 1989). Second, smaller firms tend to be less diversified and, therefore, are not only more exposed to competition but also more dependable on their core

business, increasing their proprietary costs and making them less prone to report fundamental information (e.g. Berger and Hann 2003; Healy and Palepu 2001). Third, lower transaction costs facilitate the dissemination of private information and result in better information environments. Larger firms have higher liquidity and higher trading volumes, thus transaction costs are on average lower for such firms (e.g. Easley et al. 1996). Fourth, the amount of information can also be partially explained by litigation cost theory. Larger firms have *deep-pockets* and are thus are more susceptible to litigation. In order to avoid the costs of litigation, companies tend to increase disclosures (Field et al. 2005; Skinner 1994, 1997). The rationales above allow us to conclude that larger firms tend to have better information environments and, therefore, prices are closer to fundamentals and there is less space for new information (Holthausen and Verrecchia 1988, 1990; Kim and Verrecchia 1991a, b, 1994, 1997).

Results on the association between the magnitudes of the impact of the release of a profit warning and the correspondent IT effect indicate that the stronger the impact on the announcing company the stronger the IT effect, which when combined with results described in paragraph above suggest that smaller firms will induce a stronger IT effect. However, this finding when combined with the argument that larger firms lead the market and, therefore, produce stronger IT effect creates a mixed expectation. Table 9 does not show any association between size and the magnitude of the IT effect.

4.2. Multivariate

Table 10 presents the descriptives for all the variables included in our multivariate analyses. Table 11 shows our regression results. The model used tries to explain the IT reaction based on a set of factors that we consider to be relevant, the construction and rationales supporting each measure are described below. We assume the existence of clustering in our data and, therefore, the residuals may be correlated across firms (or announcement) or across time. In order to control for this clustering bias, we adopt a “Two Dimensional Clustered Standard Errors” technique based on Petersen (2006). Our multivariate analysis focus on the announcement day returns and on the two days window [0, 1], signed (Panel A) and absolute (Panel B). Taken as a

whole, our multivariate results present limited but consistent evidence of some determinants of the IT effect.

Our dependent variable is the measure used to assess the impact of the announcement on non-announcing companies (ADR0, AADR0, CADR2 and CAADR2). Our vector of independent variables includes the similar measure for announcing companies in an attempt to capture the impact on the announcing company itself, i.e. if ADR0 is used as our dependent variable, then our vector of independent variables will include ADR0 for announcing companies. The rationales for using the impact of the announcement on the announcing company derive from our univariate results that seem to indicate a positive relationship between the magnitude of the announcement and the magnitude of the IT effect. When using absolute measures (AADR0 or CAADR2) as independent variable we use a natural logarithm transformation to normalise the distribution, that otherwise would be truncated at zero on the left hand side. These variables were trimmed at the top and bottom 0.5%. Results seem to confirm our expectation and the returns of the announcing company are significant at the 1% level for most of the regressions, being the exception the singed regression using ADR0.

We also include as independent variables the size of announcing and non-announcing companies, aiming at analysing if size has an impact on the IT effect. The results at the univariate level do not show any relation between the size of the announcing company and the IT effect and we expect larger non-announcing companies to be more immune to IT effects. Multivariate results confirm the low explanatory power of announcing companies' size and indicate that larger non-announcing firms experience lower IT effects, which is consistent with our rationales.

The main focus of this paper is to look for evidence of an IT effect at the cross-country level within a large set of European countries. For this reason, we constrain our non-announcing sample to companies based on a different country from the announcing company. In such scenario, we would then expect higher levels of international exposure to induce a stronger cross-country IT effect. We measure the level of international exposure as the ratio of international sales over total sales. Results do not confirm this rationale for the announcing firms, but results for our absolute sample seem to indicate that non-announcing companies with higher level of exposure experience a higher IT effect.

Following the same rationales supporting the use of common analysis to identify similar companies, we included dependent variables representing the number of analysts following announcing and non-announcing companies. If a company has more analysts following there are more agents in a position to conduct information from one company to another. Results in Panels A and B confirm the relevance of analysts as a driver of the IT effect.

Previous research presents mixed results on the impact of the first announcement and subsequent announcements. This can be even more problematic when focusing on profit warnings because the content of subsequent profit warnings are more firm-specific and may not necessarily show an industry trend. Additionally it is almost impossible to identify the order of profit warnings because there are no time boundaries. For instance, in annual reports, it is relatively easy to identify the first company presenting the financial statements for a given year. When focusing on profit warnings it is impossible to identify a reference date and the first announcement in the year might be the last of a series of related announcements. Nevertheless, we include a dummy variable to indicate if the profit warning is the first in the year, one if so, zero otherwise. Results seem to indicate that there is no effect associated with first announcements.

We also include a dummy variable to indicate if the announcing company is based on a common-law country. Common-law regimes are often associate with a more demanding institutional framework (e.g. Nobes and Parker 2006) and, therefore, information signals coming from those countries can be seen as of better quality or precision. Still at the country level, we include a variable to control for the existence of cultural ties between the announcing and the non-announcing country. Results fail to identify any effect associated with such law system or country analysis.

We include the Herfindahl index to control for industry concentration with the rationale that information cane be more easily disseminated in industries with higher level of concentration. In the opposite extreme, industries with low concentration, the diversity of companies and the inherent diversity of fundamentals might mitigate the relevance of the information announced by a similar company. Our results for the two days cumulative window indicate that higher levels of industry concentration are associated with stronger IT effects.

Finally, we have included dummies to control for the type of accounting regime (local or international) of both the announcing and non-announcing companies. Results are mixed. When using signed returns, results indicate that announcing companies using international GAAP produce a stronger IT effect. However, when focusing on absolute returns, the use of international GAAP is associated with lower IT effects. We do not have a rational for these mixed results.

5. Conclusions and future research

Previous research has extensively documented the existence of information transfers within a country and arising from a large variety of information events. This paper extends prior research by looking at IT across countries. Our results show evidence of an IT effect, albeit much weaker than those found in the early literature, but in line with the IT effects captured by recent research. The decline in the magnitude of IT effects can be explained by several reasons. First, our study uses a considerably larger sample than early studies, resulting in the inclusion of companies to which no IT effect is expected (e.g. small stocks). This increase in sample size will mitigate the IT effect.

When using the sample based on common analysts, sample size decreases significantly and the magnitude of the IT effect increases. However, this approach is not likely to be the rationale used by investors. Investors will tend to identify similar companies based on some common characteristics rather than in the number of common analysts. If our results allow us to shed some light on the role of analysts transferring information it does not answer the question of which characteristics are used by investors to choose peer companies.

IT can exist in different scenarios rather than within the same industry. For example, the relationship between Intel and Microsoft, although these two companies belong to different industries, an increase in the sales of Intel means that sales of operative systems by Microsoft will also increase. Another scenario that would be useful to study is industries with tight vertical supply chains, such as the automobile industry. The supplier-consumer relationship in this industry often results in the supplier being completely dependent on the client.

Future research, should aim at identifying more precise ways of defining similar companies, rather than using one based on a standard industry classification

(JCF industry portfolios for our study). Secondly, developments in the processes of collecting and analysing information reduce the scope of news in the announcements and, therefore, also contribute to the mitigation of the IT effect. Research should confirm this intuition by looking at different types of announcements and observing their relevance over time.

Tables

Table 1, Panel A: Global sample composition

Country	Companies					Profit Warnings			
	DS	JCF	Matched	Final		Source	Matched	Final	
				Industry	Analysts			Industry	Analysts
Austria	202	139	100	96	1	17	15	11	0
Belgium	375	232	172	163	6	54	46	35	0
Croatia	52	1	1	0	0	0	0	0	0
Cyprus	79	1	1	0	0	0	0	0	0
Czech Republic	190	91	62	61	0	0	0	0	0
Denmark	253	275	153	151	3	51	38	30	5
Estonia	23	32	17	16	0	1	1	0	0
Finland	170	184	99	95	7	83	40	33	14
France	1,341	1,235	676	599	114	407	327	238	99
Germany	1,093	951	424	411	74	229	157	112	65
Great-Britain	2,624	2,977	1,774	1,694	104	1,137	731	549	102
Greece	239	249	121	118	0	3	1	0	0
Hungary	2	39	2	0	0	15	1	0	0
Iceland	9	1	1	0	0	0	0	0	0
Ireland	151	87	76	72	2	32	27	22	0
Italy	508	389	264	255	15	20	18	12	4
Latvia	39	18	16	15	0	0	0	0	0
Lithuania	4	69	3	0	0	0	0	0	0
Luxembourg	101	34	29	24	0	5	5	0	0
Netherlands	400	259	225	215	39	140	134	93	29
Norway	312	294	185	169	5	51	29	21	0
Poland	147	96	55	55	0	6	5	3	0
Portugal	173	99	88	86	0	1	1	0	0
Russia	478	104	92	91	0	3	3	0	0
Slovakia	39	22	6	4	0	0	0	0	0
Slovenia	105	41	33	31	0	0	0	0	0
Spain	278	306	169	163	11	10	10	5	0
Sweden	561	435	242	219	14	60	39	29	8
Switzerland	495	359	244	232	29	102	84	60	22
Turkey	116	329	92	90	0	1	1	0	0
	10,559	**9,348**	**5,422**	**5,125**	**424**	**2,428**	**1,713**	**1,253**	**348**

For both databases (DS and JCF) only companies with market value data available for at least one year in the period 1995-2006 were included in the matching algorithm. We require companies to be listed for at least two years and we also deleted from our sample years, countries and industries with less than three companies. There are some differences in the country classification between DS and JCF, for the matched sample we assume JCF country classification. Industry and analysts columns indicate that similar companies were identified based on industry classification and common analysts, respectively.

Table 2, Panel A: Profit warnings per year

Year	Source	Matched	Final	
			Industry	Analysts
1995	1	1	0	0
1996	15	14	12	4
1997	104	93	67	24
1998	128	113	86	29
1999	42	27	24	8
2000	99	64	50	13
2001	519	370	224	51
2002	378	286	202	54
2003	297	240	184	53
2004	185	129	108	32
2005	308	197	148	44
2006	352	179	148	36
	2,428	**1,713**	**1,253**	**348**

Table 2, Panel B: Profit warnings sample composition

Description	Number	
	Industry	Analysts
Original sample	2,428	2,428
After filtering and matching	1,713	1,713
After merging with MV	1,669	1,669
After counting	1,669	1,669
Before getting non-announcing	1,669	1,669
After getting non-announcing	1,669	1,522
After merging with MV (non-announcing)	1,669	1,509
After preparing returns	1,669	1,495
After deleting no non-announcing, no data, multiple	1,261	376
After final filtering	1,261	376
After deleting less than 3 obs (country, industry and year)	1,253	348
Number of announcing firms	856	207
Number of non-announcing firms	5,117	141
Number of non-announcing firms (per-announcement)	97,122	636

Industry and analysts columns indicate that similar companies were identified based on industry classification and common analysts, respectively. Out of 2,428 profit warnings, only 1,713 were issued by companies identified in our matched sample. After deletions for incompleteness or insufficiency of data our final sample includes 1,253 profit warnings issued by 856 different companies. We matched 97,122 non-announcing company-announcement-year observations. A non-announcing company can be included in the non-announcing group for each different announcement and an announcing company can also be included in the non-announcing group corresponding to any other profit warning issued by another company in the same industry. 5,117 companies were at some point classified as non-announcing. When using common analysts to identify similar companies, the number of profit warnings in our final sample is 348, issued by 207 different announcing companies and to which 141 non-announcing companies were matched (636 company-announcement-years).

Table 3: Descriptive statistics

Panel A: Similar companies identified based on JCF industry classification

	Announcing						Non-Announcing					
	N	Mean	Std dev	Min	Median	Max	N	Mean	Std dev	Min	Median	Max
ADR0	1,253	-7.3% *	12.1%	-74.2%	-3.5%	37.4%	97,122	-0.1% *	3.5%	-87.0%	-0.1%	266.7%
AADR0	1,253	8.6% *	11.3%	0.0%	4.4%	74.2%	97,122	1.8% *	3.0%	0.0%	1.0%	266.7%
CADR2	1,253	-8.7% *	13.5%	-83.9%	-5.1%	37.8%	97,122	-0.1% *	4.8%	-89.4%	-0.2%	173.4%
CAADR2	1,253	10.4% *	12.3%	0.0%	6.0%	83.9%	97,122	2.6% *	4.0%	0.0%	1.5%	173.4%
MV	1,253	3,801	10,951	1	607	138,654	97,122	4,323	10,900	1	622	138,654

Panel B: Similar companies identified based on common analysts

	Announcing						Non-Announcing					
	N	Mean	Std dev	Min	Median	Max	N	Mean	Std dev	Min	Median	Max
ADR0	348	-3.5% *	9.1%	-65.5%	-1.2%	37.4%	636	-0.2% ***	2.7%	-27.3%	-0.2%	16.7%
AADR0	348	5.1% *	8.3%	0.0%	2.5%	65.5%	636	1.6% *	2.1%	0.0%	1.0%	27.3%
CADR2	348	-4.9% *	9.9%	-69.5%	-2.8%	37.3%	636	-0.1%	4.2%	-43.0%	-0.2%	29.1%
CAADR2	348	6.6% *	8.8%	0.0%	3.7%	69.5%	636	2.4% *	3.4%	0.0%	1.4%	43.0%
MV	348	10,274	18,512	122	3,608	138,654	636	25,335	28,382	260	15,275	138,654

*, ** and *** indicate a significance level of 1%, 5% and 10%, respectively.

Market adjusted returns on day zero (ADR0), absolute market adjusted returns on day zero (AADR0), cumulative market adjusted returns [0; 1] (CADR2) and cumulative absolute market adjusted returns [0; 1] (CAADR2) are measured using Equations (1), (3), (4) and (5), respectively. Market value (MV) is measured in millions GBP.

Table 4: IT effects: Country-level

Panel A: Similar companies identified based on JCF industry classification

Country		N	ADR0	AADR0	CADR2	CAADR2
Announcing	Austria	11	-3.6%	4.5%	-4.3%	6.0% ***
	Belgium	35	-5.1% *	5.5% *	-5.9% *	7.4% *
	Denmark	30	-8.3% *	9.1% *	-10.9% *	11.1% *
	Finland	33	-4.0% *	4.8% *	-5.0% *	6.0% *
	France	238	-2.9% *	4.5% *	-3.9% *	6.4% *
	Germany	112	-3.2% *	5.3% *	-5.0% *	7.2% *
	Great-Britain	549	-11.3% *	12.2% *	-12.3% *	13.5% *
	Ireland	22	-4.8% *	5.8% *	-7.3% *	9.5% *
	Italy	12	0.8%	1.7%	0.4%	2.0%
	Netherlands	93	-5.4% *	8.0% *	-7.3% *	10.0% *
	Norway	21	-10.4% *	10.9% *	-13.8% *	14.4% *
	Poland	3	-3.1% **	3.1% **	-4.1%	4.1%
	Spain	5	-5.0% ***	5.0% ***	-6.3% **	6.3% **
	Sweden	29	-3.5% *	5.3% *	-5.5% *	8.8% *
	Switzerland	60	-6.6% *	7.6% *	-10.6% *	11.1% *
Non-announcing	Austria	711	-0.5% *	1.8%	-1.0% *	2.7% **
	Belgium	3,386	-0.3% *	1.9% *	0.0%	2.7%
	Denmark	2,351	0.0%	1.7%	0.2%	2.8%
	Finland	2,011	0.0%	1.8%	-0.1%	2.8% *
	France	19,059	-0.1% *	1.7% *	-0.3% *	2.4% *
	Germany	10,030	-0.1% *	1.8% *	0.0%	2.6% *
	Great-Britain	38,320	-0.1% *	1.8% *	-0.1% *	2.6% *
	Ireland	1,708	-0.1%	1.9% *	0.1%	2.7% *
	Italy	1,046	0.0%	1.5% **	0.3% **	2.2%
	Netherlands	7,957	0.1% **	1.9% *	0.1% ***	2.8% *
	Norway	1,495	0.0%	2.3% *	-0.1%	2.8% *
	Poland	384	-0.9% *	2.0% *	-1.1% *	3.1% *
	Spain	621	0.5% *	1.8% *	0.2%	2.1%
	Sweden	2,004	-0.1% ***	2.1% *	-0.2% **	3.0% *
	Switzerland	6,039	0.1% **	1.7% **	0.0%	2.4%

Panel B: Similar companies identified based on common analysts

Country		N	ADR0	AADR0	CADR2	CAADR2
Announcing	Denmark	5	-13.9% ***	14.3% ***	-17.6% **	17.7% **
	Finland	14	-3.7% **	4.1% **	-5.1% **	5.4% **
	France	99	-2.6% *	4.5% *	-3.5% *	5.9% *
	Germany	65	-1.5% *	2.8% *	-3.0% *	4.3% *
	Great-Britain	102	-5.1% *	6.1% *	-6.1% *	7.1% *
	Italy	4	0.9% ***	0.9%	1.1%	1.1%
	Netherlands	29	-5.1% **	8.3% *	-6.9% *	10.4% *
	Sweden	8	-0.6%	5.1% **	-1.5%	8.5% **
	Switzerland	22	-3.7%	5.2%	-7.0% *	7.3% **
Non-announcing	Denmark	9	-0.4%	1.1%	0.5%	1.3%
	Finland	26	-0.6%	1.3%	-0.8%	2.2%
	France	169	-0.4% ***	1.6%	0.2%	2.6% ***
	Germany	177	0.1%	1.3%	-0.1%	1.8%
	Great-Britain	102	-0.7% *	1.8% *	-0.4%	2.5% **
	Italy	3	-0.1%	0.4%	-0.1%	0.4% **
	Netherlands	42	-0.7%	2.0% **	-1.3% ***	2.9% **
	Sweden	33	1.7% **	2.8% *	2.5% *	3.7% **
	Switzerland	75	-0.1%	1.4%	-0.5%	2.0%

*, ** and *** indicate a significance level of 1%, 5% and 10%, respectively.

Market adjusted returns on day zero (ADR0), absolute market adjusted returns on day zero (AADR0), cumulative market adjusted returns [0; 1] (CADR2) and cumulative absolute market adjusted returns [0; 1] (CAADR2) are measured using Equations (1), (3), (4) and (5), respectively.

Table 5: IT effects: Difference between international and within country IT effects (Country – International)

Panel A: Similar companies identified based on JCF industry classification

Description	N	Mean	Mean	Std. Dev.	Sign (p-value)	Sig. Ranked (p-value)
Median						
ADR0	1,204	-0.05%	-0.03%	1.27%	0.18	0.13
AADR0	1,204	0.01%	0.17%	0.98%	0.62	0.00
CADR2	1,204	-0.07%	-0.13%	1.84%	0.10	0.01
CAADR2	1,204	-0.02%	0.18%	1.33%	0.51	0.38
Mean						
ADR0	1,204	-0.11%	-0.09%	1.45%	0.00	0.00
AADR0	1,204	-0.09%	0.04%	1.13%	0.00	0.07
CADR2	1,204	-0.18%	-0.23%	2.00%	0.00	0.00
CAADR2	1,204	-0.17%	-0.01%	1.50%	0.00	0.00

Panel B: Similar companies identified based on common analysts

Description	N	Mean	Mean	Std. Dev.	Sign (p-value)	Sig. Ranked (p-value)
Median						
ADR0	126	0.08%	0.05%	1.88%	0.66	0.58
AADR0	126	-0.12%	-0.03%	1.53%	0.42	0.75
CADR2	126	0.09%	-0.16%	2.64%	0.53	0.74
CAADR2	126	0.04%	0.07%	1.82%	0.66	0.63
Mean						
ADR0	126	-0.05%	0.07%	1.88%	0.79	0.67
AADR0	126	-0.05%	-0.05%	1.52%	0.66	0.63
CADR2	126	-0.02%	-0.17%	2.65%	0.93	0.63
CAADR2	126	0.02%	0.00%	1.85%	0.79	0.79

*, ** and *** indicate a significance level of 1%, 5% and 10%, respectively.
Market adjusted returns on day zero (ADR0), absolute market adjusted returns on day zero (AADR0), cumulative market adjusted returns [0; 1] (CADR2) and cumulative absolute market adjusted returns [0; 1] (CAADR2) are measured using Equations (1), (3), (4) and (5), respectively.

Table 6: IT effects per year

Panel A: Similar companies identified based on JCF industry classification

Year	Description	N	ADR0	AADR0	CADR2	CAADR2
1996	Announcing	12	-1.0%	2.6%	-1.7%	4.2%
1997		67	-1.0% ***	2.8% *	-0.3%	4.8% *
1998		86	-2.2% *	4.2% *	-3.0% *	6.6% *
1999		24	-3.4% *	3.8% ***	-5.9% *	6.1% *
2000		50	-8.6% *	10.4% *	-13.7% *	14.7% *
2001		224	-9.0% *	10.5% *	-10.4% *	12.6% *
2002		202	-10.9% *	12.7% *	-12.7% *	14.7% *
2003		184	-9.2% *	10.2% *	-11.0% *	11.7% *
2004		108	-7.4% *	8.2% *	-9.8% *	10.4% *
2005		148	-5.8% *	6.7% *	-6.4% *	7.7% *
2006		148	-5.6% *	6.2% *	-6.1% *	6.8% *
1996	Non-announcing	1,378	0.1%	1.1% **	-0.1%	1.6%
1997		5,233	-0.1% *	1.3% *	-0.3% *	2.1% *
1998		9,030	-0.2% *	1.7% *	-0.4% *	2.6% *
1999		2,072	0.2% *	1.9%	0.4% *	2.9%
2000		4,321	0.0%	2.4% *	-0.1%	3.6% *
2001		20,335	-0.1% *	2.2% *	-0.1% **	3.1% *
2002		17,153	-0.2% *	2.2% *	-0.2% *	3.1% *
2003		14,813	0.1% *	1.9% *	0.2% *	2.7% *
2004		6,543	0.0%	1.3% *	-0.1% **	1.8% **
2005		8,445	0.0%	1.1% **	0.0%	1.7% *
2006		7,799	0.0%	1.2%	0.0%	1.7%

Panel B: Similar companies identified based on common analysts

Year	Description	N	ADR0	AADR0	CADR2	CAADR2
1998	Announcing	29	-1.1%	3.1% **	-0.5%	3.9% **
1999		8	-2.9% *	2.9%	-5.7% **	5.7%
2000		13	-0.1%	3.1%	-7.3% *	7.5% *
2001		51	-4.2% *	6.4% *	-5.3% *	7.8% *
2002		54	-6.8% *	8.9% *	-8.9% *	11.6% *
2003		53	-4.8% *	6.2% *	-7.0% *	7.5% *
2004		32	-4.9% *	5.4% **	-5.9% *	6.8% **
2005		44	-2.2% *	2.9% *	-2.8% *	3.5% *
2006		36	-2.2% **	3.7% *	-2.7% *	4.2% *
1998	Non-announcing	1	-1.2% *	1.2% *	-0.6% *	0.6% *
1999		4	1.5%	2.1%	1.8%	2.4%
2000		14	0.8%	1.7%	0.9%	2.7%
2001		69	-1.0% **	2.1% *	-0.7%	2.8%
2002		212	-0.2%	2.1% *	0.1%	3.4% *
2003		161	0.1%	1.4%	0.0%	2.0% *
2004		32	-1.2% **	1.6%	-1.3% **	2.0%
2005		86	-0.1%	0.8% ***	-0.1%	1.0%
2006		57	-0.1%	0.8%	-0.1%	1.2%

*, ** and *** indicate a significance level of 1%, 5% and 10%, respectively.
Market adjusted returns on day zero (ADR0), absolute market adjusted returns on day zero (AADR0), cumulative market adjusted returns [0; 1] (CADR2) and cumulative absolute market adjusted returns [0; 1] (CAADR2) are measured using Equations (1), (3), (4) and (5), respectively.

Table 7: Signal of the effect around the announcement

Panel A: Similar companies identified based on JCF industry classification

Description	N	ADR0	AADR0	CADR2	CAADR2
Announcing <=0	955	-10.4% *	10.4% *	-11.7% *	12.1% *
Non-announcing >=0	33,825	1.9% *	1.9% *	1.8% *	2.7% *
Non-announcing <0	40,004	-1.7% *	1.7% *	-1.8% *	2.5% *

Panel B: Similar companies identified based on common analysts

Description	N	ADR0	AADR0	CADR2	CAADR2
Announcing <=0	237	-6.3% *	6.3% *	-7.5% *	7.8% *
Non-announcing >=0	131	1.3% *	1.3%	1.5% *	1.9%
Non-announcing <0	215	-1.9% *	1.9% *	-1.9% *	2.6% *

*, ** and *** indicate a significance level of 1%, 5% and 10%, respectively.

Market adjusted returns on day zero (ADR0), absolute market adjusted returns on day zero (AADR0), cumulative market adjusted returns [0; 1] (CADR2) and cumulative absolute market adjusted returns [0; 1] (CAADR2) are measured using Equations (1), (3), (4) and (5), respectively.

Table 8: Rank of absolute returns around the announcement

Panel A: Similar companies identified based on JCF industry classification

Description	Rank	N	ADR0	AADR0	CADR2	CAADR2
Announcing	0	250	-0.1% **	0.5% *	-1.9% *	3.5% *
	1	251	-0.3% **	1.8% *	-2.4% *	4.2% *
	2	251	-2.4% *	4.4% *	-3.7% *	6.0% *
	3	251	-8.3% *	9.6% *	-8.9% *	10.7% *
	4	250	-25.6% *	26.7% *	-26.8% *	27.7% *
Non-announcing	0	18,038	0.0%	1.5%	-0.1% **	2.3% *
	1	20,640	0.0%	1.7% *	0.0%	2.4% *
	2	20,365	-0.1% *	1.9% *	-0.1% ***	2.7% *
	3	19,393	-0.1% *	1.9% *	-0.1% *	2.7% *
	4	18,686	-0.1% *	2.1% *	-0.2% *	3.0% *

Panel B: Similar companies identified based on common analysts

Description	Rank	N	ADR0	AADR0	CADR2	CAADR2
Announcing	0	69	0.0%	0.3% *	-1.5% *	2.8% *
	1	70	-0.1%	1.1%	-1.4% *	2.7% ***
	2	70	-0.8% **	2.5% *	-2.3% *	3.7% *
	3	70	-3.0% *	4.9% *	-4.3% *	5.8% *
	4	69	-13.9% *	16.9% *	-14.8% *	17.9% *
Non-announcing	0	121	-0.2%	1.2%	0.1%	1.7%
	1	113	-0.3%	1.3%	0.1%	2.2%
	2	177	0.2%	1.4%	0.0%	2.0%
	3	145	-0.3%	1.7% *	0.1%	2.4% **
	4	80	-0.6%	3.0% *	-1.0%	4.2% *

*, ** and *** indicate a significance level of 1%, 5% and 10%, respectively.

Market adjusted returns on day zero (ADR0), absolute market adjusted returns on day zero (AADR0), cumulative market adjusted returns [0; 1] (CADR2) and cumulative absolute market adjusted returns [0; 1] (CAADR2) are measured using Equations (1), (3), (4) and (5), respectively.

Announcing companies are ranked based on their reaction (absolute market adjusted returns) on the event day and non-announcing companies are assigned to the rank of the correspondent announcing company. Rank 0 (4) corresponds to the lowest (highest) quintile.

Table 9: Announcing companies are ranked by market value

Ranked based on market value of the announcing company

Panel A: Similar companies identified based on JCF industry classification

Description	Rank	N	ADR0	AADR0	CADR2	CAADR2
Announcing	0	250	-11.1% *	12.1% *	-12.3% *	14.2% *
	1	251	-9.4% *	10.6% *	-11.2% *	12.6% *
	2	251	-8.3% *	9.2% *	-9.8% *	11.2% *
	3	251	-4.8% *	6.5% *	-6.4% *	8.2% *
	4	250	-3.1% *	4.4% *	-4.0% *	5.8% *
Non-announcing	0	19,470	0.1% **	1.9% *	0.0%	2.8% *
	1	19,157	0.0% ***	1.9% *	0.0%	2.7% *
	2	18,316	-0.1% *	1.8% *	-0.2% *	2.6% *
	3	19,197	-0.1% *	1.7% *	-0.1% *	2.4% *
	4	20,982	-0.1% *	1.7% *	-0.1% *	2.5% *

Panel B: Similar companies identified based on common analysts

Description	Rank	N	ADR0	AADR0	CADR2	CAADR2
Announcing	0	69	-7.1% *	7.9% *	-8.3% *	9.6% *
	1	70	-3.3% **	6.2% *	-5.2% *	7.8% *
	2	70	-3.3% *	4.3% *	-4.8% *	5.7% *
	3	70	-2.7% *	3.9% *	-4.0% *	5.4% *
	4	69	-1.2% **	3.3% *	-2.0% *	4.3% *
Non-announcing	0	17	-1.5%	1.6%	-1.4%	2.2%
	1	63	-0.6% **	1.6%	-0.6% ***	1.8%
	2	66	0.0%	1.4%	0.0%	1.8%
	3	151	0.0%	1.5% ***	0.2%	2.2%
	4	339	-0.2%	1.7% *	-0.1%	2.6% *

*, ** and *** indicate a significance level of 1%, 5% and 10%, respectively.

Market adjusted returns on day zero (ADR0), absolute market adjusted returns on day zero (AADR0), cumulative market adjusted returns [0; 1] (CADR2) and cumulative absolute market adjusted returns [0; 1] (CAADR2) are measured using Equations (1), (3), (4) and (5), respectively.

Announcing companies are ranked based on their market value and non-announcing companies are assigned to the rank of the correspondent announcing company. Rank 0 (4) corresponds to the lowest (highest) quintile.

Table 10: Descriptives for the multivariate analysis

Panel A: Similar companies defined based on industry

	Dependent variables - Mean							
	N	**Mean**	**Std dev**	**Min**	**Q1**	**Median**	**Q3**	**Max**
Non-announcing ADR0	96,151	-0.1%	2.4%	-11.7%	-1.1%	-0.1%	0.9%	13.2%
Non-announcing AADR0	96,163	1.7%	2.0%	0.0%	0.4%	1.0%	2.1%	16.8%
Non-announcing CADR2	96,151	-0.1%	3.5%	-15.9%	-1.7%	-0.2%	1.3%	19.3%
Non-announcing CAADR2	96,151	2.4%	2.9%	0.0%	0.7%	1.5%	3.1%	23.8%

	Independent variables							
	N	**Mean**	**Std dev**	**Min**	**Q1**	**Median**	**Q3**	**Max**
Announcing ADR0	1,240	-7.2%	11.2%	-64.8%	-11.3%	-3.5%	-0.1%	12.5%
Announcing AADR0	1,240	8.3%	10.4%	0.0%	1.4%	4.4%	11.7%	64.0%
Announcing CADR2	1,241	-8.6%	12.6%	-66.2%	-13.0%	-5.1%	-0.7%	18.7%
Announcing CAADR2	1,239	10.1%	11.4%	0.1%	2.3%	6.0%	13.3%	65.7%
Announcing MV	1,253	3,801	10,951	1	188	607	2,528	138,654
Ann. int. exposure	1,253	38.6%	34.9%	0.0%	0.0%	36.9%	70.6%	100.0%
Dummy ind. int. exposure	1,253	44.1%	49.7%	0.0%	0.0%	0.0%	100.0%	100.0%
Announcing analyst following	1,253	22	22	0	4	16	35	135
Dummy first ann.	1,253	23.5%	42.4%	0.0%	0.0%	0.0%	0.0%	100.0%
Dummy common law	1,253	45.6%	49.8%	0.0%	0.0%	0.0%	100.0%	100.0%
Herf. Index	1,253	9.3%	5.9%	1.9%	5.4%	7.5%	11.8%	50.0%
Ann. GAAP	1,253	0.30	0.46	0.00	0.00	0.00	1.00	1.00
Non-ann. MV	97,122	1,565	6,739	0	42	174	658	466,990
Non-ann. analyst following	97,122	11.100	17.059	0.000	0.000	3.000	15.000	147.000
Non-ann. int. exposure	97,122	0.210	0.305	0.000	0.000	0.000	0.409	1.000
Cultural ties	97,122	0.072	0.259	0.000	0.000	0.000	0.000	1.000
Non-ann. GAAP	97,122	0.26	0.44	0.00	0.00	0.00	1.00	1.00

Market adjusted returns on day zero (ADR0), absolute market adjusted returns on day zero (AADR0), cumulative market adjusted returns [0; 1] (CADR2) and cumulative absolute market adjusted returns [0; 1] (CAADR2) are measured using Equations (1), (3), (4) and (5), respectively. Market value (MV) is measure as the natural logarithm of a company's market value. International exposure is measures as the ratio of international sales over total sales. Herfindahl index was constructed using sales.

Table 11: Regression results

Panel A: Signed

	ADR_0	CADR_2
Intercept	0.000	-0.001
Returns Announcing	0.003	0.007 *
Ann. MV (log)	0.000 **	0.000
Ann. int. exposure	0.000	0.001
Dummy ind. int. exposure	0.000	-0.001 ***
Ann. analyst following (log)	0.000	0.000 ***
Dummy first ann.	0.001	0.001
Dummy common law	0.000	0.001
Herf. Index	-0.001	0.009 ***
Non-ann. MV (log)	0.000	0.000
Non-ann. anl following (log)	0.000	0.000
Non-ann. int. exposure	0.000	0.001
Cultural ties	0.000	0.000
Ann. GAAP	0.001 ***	0.001 **
Non-ann. GAAP	0.000	0.000
R2	0.001	0.001
Adj R2	0.001	0.001
Num. Obs.	95,241	95,180

Panel B: Abosulute

	LAADR_0	LCAADR_2
Intercept	0.021 *	0.030 *
Returns Announcing	0.014 *	0.021 *
Ann. MV (log)	0.000	0.000
Ann. int. exposure	0.001	0.001
Dummy ind. int. exposure	-0.002 **	-0.003 *
Ann. analyst following (log)	0.000 *	0.000 **
Dummy first ann.	-0.001	-0.001
Dummy common law	-0.001	-0.002
Herf. Index	0.006	0.013 *
Non-ann. MV (log)	-0.001 *	-0.001 *
Non-ann. anl following (log)	0.000 **	0.000 **
Non-ann. int. exposure	0.003 *	0.004 *
Cultural ties	0.000	-0.001
Ann. GAAP	-0.002 *	-0.002 **
Non-ann. GAAP	-0.001	-0.002 **
R2	0.022	0.027
Adj R2	0.022	0.027
Num. Obs.	95,169	95,247

References

Aharony, J. and I. Swary (1983). "Contagion effects of bank failures: Evidence from capital markets." *Journal of Business* 56 (3): 305-322

Alves, P., W. Beekes and S. Young (2007). "A Comparison of UK Firms' Financial Statement Data From Six Sources." *Working paper: Lancaster University*.

Baginski, S. (1987). "Intraindustry information transfers associated with management forecasts of earnings." *Journal of Accounting Research* 25 (2): 196-219

Ball, R. and P. Brown (1968). "An empirical evaluation of accounting income numbers." *Journal of Accounting Research* 6 (2): 159-178.

Berger, P. G. and R. Hann (2003). "Segment Profitability and the Proprietary Costs of Disclosure." *SSRN Electronic Paper Collection*.

Bhushan, R. (1989). "Firm characteristics and analysts following." *Journal of Accounting and Economics* 11 (2-3): 255-274.

Bowen, R., R. Castanias and L. Daley (1983). "Intra-industry effects of the accident at Three-Mile Island." *Journal of Financial and Quantitative Analysis* 18 (1): 87-111.

Cahan, S. F., D. Emanuel and J. Sun (2006). "Shredded reputation: Did Andersen's non-US clients suffer and why?" *Working paper: University of Auckland*.

Campbell, J. Y., A. W. Lo and A. C. Mackinlay (1997). *The econometrics of financial markets*. Princeton, Princeton University Press.

Chaney, P. K. and K. L. Philipich (2002). "Shredded reputation: the cost of audit failure." *Journal of Accounting Research* 40 (4): 1221-1245.

Clinch, G. and N. Sinclair (1987). "Intra-industry information releases: A recursive systems approach." *Journal of Accounting and Economics* 9: 89-106

Diaz, C. and S. McLeay (1996). "Bad debt provisions and intra-industry information transfer in the banking sector." *European Accounting Review* 5: 625-650.

Dietrich, R. (1989). "Discussion of “Voluntary disclosure choice and earnings information transfer”." *Journal of Accounting Research* 27 (Supplement): 106-110.

Easley, D., N. M. Kiefer, M. O'Hara and J. Paperman (1996). "Liquidity, information, and infrequently traded stocks." *Journal of Finance* 51 (4): 1405-1436.

Eckbo, B. E. (1983). "Horizontal mergers, collusion and stockholder wealth." *Journal of Financial Economics* 11: 241-273.

Ettredge, M. and V. Richardson (2002). "Information Transfer among internet firms: the case of hacker attacks." *Working paper: University of Kansas*.

Field, L., M. Lowry and S. Shu (2005). "Does disclosure deter or trigger litigation?" *Journal of Accounting and Economics* 39 (3): 487-507

Firth, M. (1976). "The impact of earnings announcements on the share price behaviour of similar type firms." *Economic Journal* 86 (342): 296-306.

___ (1996a). "Dividend changes, abnormal returns, and intra-industry firm valuations." *Journal of Financial and Quantitative Analysis* 31 (2): 189-212.

___ (1996b). "The Transmission of Corporate Financial Information Across National Borders and Equity Market Linkages." *Review of Accounting Studies* 1: 309-337.

Foster, G. (1981). "Intra-industry information transfers associated with earnings releases." *Journal of Accounting and Economics* 3 (3): 201-232.

Freeman, R. and S. Tse (1992). "An earnings prediction approach to examining intercompany information transfers." *Journal of Accounting and Economics* 15 (4): 509.

Frost, C. A. (1995). "Intraindustry information transfer: An analysis of research methods and additional evidence." *Review of Quantitative Finance and Accounting* 5 (2): 111-126.

Gleason, C. A., N. T. Jenkins and W. B. Johnson (2004). *Financial Statement Credibility: The Contagion Effects of Accounting Restatements*, SSRN.

Gonen, I. (2003). "Intra-Industry Effects of Corrective Disclosures: Is Mistrust Contagious?" *Working paper: The Leonard N. Stern School of Business*.

Han, J., J. Wild and K. Ramesh (1989). "Managers' earnings forecasts and intra-industry information transfers." *Journal of Accounting and Economics* 11: 3-33.

Han, J. C. Y. and J. J. Wild (1990). "Unexpected Earnings and Intraindustry Information Transfers: Further Evidence." *Journal of Accounting Research* 28 (1): 211-219.

Healy, P., M. and K. G. Palepu (2001). "Information asymmetry, corporate disclosure, and the capital markets: A review of the empirical disclosure literature." *Journal of Accounting and Economics* 31 (1-3): 405-440.

Holthausen, R. W. and R. E. Verrecchia (1988). "The effect of sequential information releases on the variance of price changes in an intertemporal multi-asset market." *Journal of Accounting Research* 26 (1): 82-106.

___ (1990). "The effect of informedness and consensus on price and volume behavior." *The Accounting Review* 65 (1): 191-208.

Kim, O. and R. E. Verrecchia (1991a). "Market reaction to anticipated announcements." *Journal of Financial Economics* 30 (2): 273-309.

___ (1991b). "Trading volume and price reactions to public announcements." *Journal of Accounting Research* 29 (2): 302-321.

___ (1994). "Market liquidity and volume around earnings announcements." *Journal of Accounting and Economics* 17 (1-2): 41-67.

___ (1997). "Pre-announcement and event-period private information." *Journal of Accounting and Economics* 24 (3): 395-419.

Lang, L. H. P. and R. M. Stulz (1992). "Contagion and competitive intra-industry effects of bankruptcy announcements." *Journal of Financial Economics* 32: 45-60.

Li, X.-M. (2006). "A revisit of international stock market linkages: new evidence from rank tests for nonlinear cointegration." *Scottish Journal of Political Economy* 53 (2): 174-197.

Longin, F. and B. Solnik (2001). "Extreme correlation of international equity markets." *Journal of Finance* 56 (2): 649-676.

May, R. G. (1971). "The Influence of Quarterly Earnings Announcements on Investor Decisions as Reflected in Common Stock Price Changes." *Journal of Accounting Research* 9 (3): 119-163.

Nobes, C. and R. H. Parker (2006). *Comparative international accounting*. New York, Financial Times.

Petersen, M. A. (2006). *Estimating Standard Errors in Finance Panel Data Sets: Comparing Approaches*, SSRN.

Piotroski, J. D. and D. T. Roulstone (2004). "The influence of analysts, institutional investors, and insiders on the incorporation of market, industry, and firm-specific information into stock prices." *The Accounting Review* 79 (4): 1119-1151.

Pownall, G. and G. Waymire (1989). "Voluntary disclosure choice and earnings information transfer." *Journal of Accounting Research* 27 (Supplement): 85-105.

Pyo, Y. and S. Lustgarten (1990). "Differential intra-industry information transfer Associated with managerial earnings forecasts." *Journal of Accounting and Economics* 13 (4): 365-379.

Ramnath, S. (2002). "Investor and Analyst Reactions to Earnings Announcements of Related Firms: An Empirical Analysis." *Journal of Accounting Research* 40 (5): 1351-1376.

Sheskin, D. J. (2004). *Handbook of parametric and nonparametric statistical procedures*. Boca Raton, Chapman & Hall.

Skinner, D. J. (1994). "Why firms voluntarily disclose bad news." *Journal of Accounting Research* 32 (1): 38-60.

___ (1997). "Earnings disclosures and stockholder lawsuits." *Journal of Accounting and Economics* 23 (3): 249-282.

Slovin, M., M. Sushka and Y. Bendeck (1991). "The intra-industry effects of going-private transactions." *Journal of Finance* 46 (4): 1537-1550

Szewczyck, S. (1992). "The intra-industry transfer of information inferred from announcements of corporate securities offerings." *Journal of Finance* 47 (5): 1935-1945.

Thomas, J. and F. Zhang (2006). "Overreaction to intra-industry information transfers?" *Working paper: Yale University*.

Tse, S. and J. Tucker (2006). "Industry-wide dynamics in earnings warnings." *Working paper: Texas A&M University*.

Wasley, C. E. (2001). "Information Externalities Associated with Earnings Pre-announcements." *Working paper: William E. Simon Graduate School of Business Administration*.

Xu, B. (2003). "Can Performance Differentiate Intra-Industry Information Transfer?" *Working paper: Wilfrid Laurier University*.

Yadav, P. (1992). "Event Studies based on volatility of returns and trading volume: a review." *British Accounting Review* 24: 157-184.