

# Accounting and capital markets: a survey of the European evidence

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## **ABSTRACT**

The relationship between accounting information and capital markets has been the subject of numerous studies, especially in the US. The purpose of this article is to examine the corresponding evidence in Europe. This review classifies the European literature into three groups: studies of the market reaction to newly released accounting information; studies of the long-term association between stock returns and accounting numbers; studies devoted to the use of accounting data by investors and to the impact of market pressure on accounting choices. The paper reviews and summarizes the main results related to each of these topics. It also addresses some methodological issues and provides suggestions for future research.

## **1. INTRODUCTION**

Since the pioneering work of Ball and Brown (1968), the relationship between accounting information and capital markets has attracted considerable attention, to the point that it is probably one of the most popular issues in the accounting literature. The interest for this subject is legitimate, given the generally accepted statement that accounting figures are aimed at providing investors with relevant information for their investment decisions. Even if accounting data are used in various contexts such as the contracting process within the firm or between the firm and its creditors and suppliers, regarding capital markets they are supposed to facilitate the prediction of firms' future cash flows and help investors assess future securities' risk and returns. This is certainly why innumerable studies have been conducted in the US during the last three decades with the aim of determining to what extent this objective was achieved. This article examines

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the corresponding European evidence. Three types of research are successively considered. (1) Studies of the market reaction to the release of new accounting information that analyse the stock price impact of accounting disclosures in order to determine whether these are useful to market participants. (2) Studies of the long-term association between stock returns and accounting numbers, which examine the extent to which the information conveyed by accounting figures is consistent with that reflected in stock prices. (3) Complementary studies devoted to the use of accounting data by investors and to the influence of market considerations on accounting choices. For practical reasons, this review focuses on the most recent studies and is limited to articles published in English.

## **2. THE MARKET RESPONSE TO ACCOUNTING DISCLOSURES**

The primary objective of capital market research has been to assess whether accounting data provide value-relevant information to investors, incremental to all other sources of publicly available information. The information content of accounting numbers is inferred from changes in the level or in the variability of stock prices and from changes in the volume of security trades over a short time period during which these data are publicly released. After a short description of methodological issues related to market reaction studies, this section summarizes the European evidence on the impact of accounting disclosures on stock returns or trading volumes. It is shown that clear market reactions to accounting announcements have been detected in all European countries where such studies have been conducted. Since these reactions exhibit significant differences between firms, this section also reviews studies that have analysed the determinants of these differences. Finally, it examines the empirical evidence related to the post-announcement drift anomaly and offers conclusions and suggestions for future research on the market response to accounting disclosures.

### **Empirical design of market reaction studies**

If capital markets are efficient, stock prices must reflect quickly and fully any newly released information. Consequently, a change in the level or in the variability of stock prices or a change in the quantity of security trades is expected during the announcement period if the disclosed numbers convey new information to market participants about the timing, the amount or the uncertainty of anticipated future cash flows. In fact, most of these studies focus on the informational characteristics of the bottom-line earnings only. The information content of earnings is inferred from the mean abnormal returns, from the volatility of returns or from changes in the volume of trading over a short period around the announcement date.

The mean abnormal return methodology makes the assumption that earnings should cause a stock price increase if they convey good news, and a price

decrease if they communicate bad news. Since the amount of earnings is *per se* meaningless, this number must be contrasted to the market's expectations about earnings. The first step is therefore to disentangle the expected and unexpected components of reported earnings. Expected earnings are generally estimated in two different ways. Assuming that earnings follow a random process, some studies take earnings of a given year as the following year's expected earnings. Other studies use the analysts' consensus forecast as the best available measure of expected earnings. Under the information-content hypothesis, positive unexpected earnings should on average lead to positive abnormal returns, and negative unexpected earnings to negative abnormal returns. Earnings are supposed to convey relevant information if abnormal stock returns are statistically positive for firms with positive unexpected earnings, and statistically negative for companies with negative unanticipated earnings. Abnormal returns are defined as the difference between actual and market-adjusted predicted returns.

The methodology based on the volatility of returns assumes that any announcement that does convey information should cause a price change. The variability of returns is therefore expected to be higher at the announcement date than on any other day. Hence, observing whether there is an increase in the volatility of returns on announcement days can test the hypothesis that earnings convey information to investors. In the same way, if earnings are a relevant source of information for investors, they should lead to portfolio rearrangements and therefore their release should cause significant increases in the number of security trades. The methodologies used to detect these increases are very similar to those adopted to measure mean abnormal returns: the trading volume metric is either the number or the market value of traded shares, and abnormal volumes are defined as the difference between actual and expected volumes at the announcement dates. The methodology based on trades, just like the one based on the volatility of returns, has the advantage of circumventing the problem of specifying an earnings expectation model.

### **The market reaction to annual and interim accounting disclosures**

European studies which have investigated the stock price reaction to earnings announcements confirm the seminal findings of Beaver (1968) in the US: earnings disclosures lead to significant stock price changes or trading volume increases. In the UK, Firth (1981) reported both abnormal absolute stock returns and significant trading volume increases at annual earnings announcement dates under the period 1976–78, for a sample of 120 companies. Similarly, Pope and Inyangete (1992) observed a strong increase in the volatility of security returns around announcement dates for a sample of 3,541 UK annual earnings announcements between 1985 and 1987. With a different approach, Hew *et al.* (1996) confirm that UK annual earnings have information content for investors, since positive (negative) unexpected annual earnings were found to cause significant positive (negative) returns. Results in Finland, Spain or France are consistent with those obtained in

the UK. Using data from the Finnish stock market, Kallunki (1996) showed that positive (negative) unexpected annual earnings announcements are associated with positive (negative) abnormal returns at the announcement dates. In the same vein, Gajewski and Qu  r   (2001) analysed the French market response to annual earnings announcements by comparing actual earnings with those expected by financial analysts. Their data indicate that positive unexpected earnings lead to positive abnormal returns, while negative unexpected ones cause negative returns. This result is consistent with a study by Gajewski (1999) which found that trades on the Paris Stock Exchange increase significantly around earnings announcements. In Spain, Pellicer and Rees (1999) examined the volatility of security returns around 223 annual earnings announcements. By ranking the absolute abnormal returns across a 51-day window centred on the disclosure date, they observed that the volatility of returns was the highest during the two days surrounding earnings announcements. Stating that the information content of earnings announcements should cause a reaction that should be more pronounced on option prices than on stock prices because of the leverage effect of options, Donders *et al.* (2000) studied the impact of earnings releases on the volatility and the trading volume of call options on Dutch stocks at the annual earnings announcement dates. As expected, they found that the volatility of option prices and trading volumes increase around the announcement days and drop afterwards.

Firms regularly release information through quarterly and half-year disclosures that may help investors anticipate the level of annual earnings. Following Kiger (1972) or Foster (1977) in the US, several European studies have been devoted to the usefulness of these interim disclosures. In France, listed companies must disclose their quarterly turnovers and release half-year reports containing a six-month income statement and relevant information on their operations. Since interim disclosures are at once not audited and less abundant than semi-annual releases, Gajewski and Qu  r   (2001) hypothesized that the market reaction to quarterly disclosures should be lower than the one of half-year reports. Their results for the 1994–96 period indicate that turnover data disclosed by French quoted companies at the end of each quarter do not cause significant market reactions. This leads the authors to question the usefulness of these mandatory disclosures. In contrast, stock price reactions to half-year and annual releases are both statistically significant but, as expected, the information content of half-year disclosures appears to be less than the one of annual reports. With regard to interim accounting information, Spanish firms are subject to more demanding requirements than French ones. They must disclose earnings quarterly and publish a half-year report containing a profit and loss account and a balance sheet. This is certainly why, unlike the French evidence, Pellicer and Rees (1999) did not notice any significant difference in the volatility of returns accompanying annual and interim releases in Spain. In contrast with the French and Spanish evidence, the information content hypothesis of interim reports appears to be rejected in Belgium. In this country, a law implemented in 1990 obliges listed firms to disclose semi-annual earnings. Van Huffel *et al.* (1996) have thus

analysed the stock price reaction to half-year report releases just after the establishment of this new legal requirement. Although the sign of unexpected earnings was positively associated with the sign of abnormal returns at the disclosure dates, the authors did not detect any clear announcement effect. Interim disclosures under study were not associated with statistically significant abnormal returns.

Since accounting figures are reported continuously throughout the year, Firth (1981) proposed to examine the incremental information content of four accounting events in order to better understand how investors process accounting data. These events are the release of interim reports, the announcement of preliminary earnings, the release of annual reports and the annual meeting of shareholders. The study covered the 1976–78 period and the sample consisted of 120 randomly selected UK companies listed on the London Stock Exchange. The information content of each event was determined by ranking by size the cross-sectional average of the absolute values of weekly abnormal returns around each announcement. Firth's results indicate that preliminary and interim announcements possess the highest information content. The release of annual reports also exhibits a significant information content. In contrast, the price impact of annual general meetings seems insignificant. Correlation tests showed that abnormal returns associated with preliminary earnings announcements were positively related to abnormal returns at both interim disclosure and annual report dates. This suggests that firms that exhibit highly informative preliminary announcements also have highly informative annual reports and interim disclosures. Rippington and Taffler (1995) replicated Firth's study using daily instead of weekly share returns. Unlike Firth, they noted that stock price reactions to annual reports are frequently low, suggesting that such disclosures do not convey relevant information to investors. However, since some of their sampled firms exhibited outstandingly high abnormal returns at the time of their annual report release, the authors analysed financial press comments on these firms' reports. They ascertained that the observed high returns were due to unexpected specific information in the audit report, the funds statement, the chairman's statement, geographical or activity breakdowns, or in the notes to the accounts. This led Rippington and Taffler to express the view that, although they do not generally induce significant price reactions because they mainly confirm data that are correctly anticipated by investors, annual reports play a significant role in the valuation process due to the extremely relevant information they disclose in a relatively small but nonetheless important number of specific cases.

### **The information content of specific accounting data**

Several European studies have focused on the price effect of specific accounting data. Peasnell *et al.* (1987), for example, have investigated the information content of current cost information disclosed by about 200 companies listed on the London Stock Exchange between 1980 and 1984. Their results showed that

this information has a small but real impact on stock returns in days surrounding the earnings announcement. Given that Finnish accounting rules allow firms to manage their reported earnings in a variety of ways and assuming that Finnish companies pay great attention to tax considerations when preparing their financial reports, Booth *et al.* (1996) expressed the view that accounting earnings should be strongly manipulated in Finland, which should restrict their information content. To examine this hypothesis, they measured the price impact of five different income levels that are systematically adjusted for earnings management by Finnish financial analysts, in addition to the traditional net earnings usually reported by firms. Their results suggest that investors react to negative but not to positive unexpected earnings. Moreover, and perhaps more interestingly, the authors noted that the magnitude of unexpected stock returns around announcement days is related to two specific income components which proxy for the intensity of earnings management. This suggests that, contrary to what was expected, investors are more interested in the information potentially conveyed by manipulated earnings than by the tax impact of such manipulations.

Given that Swiss firms can comply either with EU directives, IAS or Swiss GAAP on a voluntary basis, Switzerland offers the opportunity to determine whether different GAAP regimes possess different information content to investors. Using a sample of 247 earnings announcements made by Swiss listed companies which changed their accounting standards to switch from Swiss GAAP to either IAS or EU directives during the period 1985–93, Auer (1996) compared the stock price reactions to earnings announcements before and after the adoption of the new standards. He observed that the switch from Swiss GAAP to IAS or EU directives was accompanied by an increase of stock price volatility at the earnings announcement date. This suggests that earnings based on IAS or EU directives have an information content higher than those based on Swiss GAAP. The results also showed that there is no significant difference in the information content between EU directives earnings and IAS-based earnings. In the same line, Caramanolis-Çötelli *et al.* (1999) have examined the influence of disclosure quality on the Swiss market reaction to annual report releases. Using a rating measure computed by the Swiss Financial Analyst Federation as a proxy for disclosure quality, they observed a positive relationship between this variable and absolute abnormal stock returns. Given that this influence was significant for positive abnormal returns only, the authors suggest that ‘good’ firms might adopt a policy of high quality disclosure to signal their type to the market.

### **The determinants of the market reaction to accounting disclosures**

Since the market reaction to accounting disclosures differs among firms, several studies have analysed the possible determinants of these differences. Following Beaver *et al.* (1979) in the US, European studies have investigated the magnitude of unexpected earnings, considering that the greater the surprise, the larger the

investors' reaction. The results of studies by Firth (1981) in the UK, Pellicer and Rees (1999) in Spain or Gajewski and Quéré (2002) in France confirmed the US evidence: trading volumes, volatility of returns or mean abnormal returns are positively related to the size of unexpected annual or interim earnings.

Following Grant (1980), who found that the information content of earnings announcements was greater for small OTC firms than that for large companies listed on the New York Stock Exchange, several European studies investigated whether the market reactions induced by accounting disclosures are more pronounced for small firms. Results by Firth (1981) or by Rippington and Taffler (1995) in the UK and by Gajewski and Quéré (2001) in France confirm this intuition: the larger the market value of the firm, the smaller its abnormal returns at the preliminary or the interim announcement dates. The hypothesis put forward to explain this relation suggests that small firms tend to disclose less information and to receive less attention from professional investment analysts and fund managers than large firms. Consequently, their accounting figures should convey higher amounts of information than those of large firms because they have not been preempted by non-accounting information disclosed and extensively analysed during the reporting period. To determine whether the information content of accounting disclosures is negatively related to the amount of information that was available to market participants prior to these disclosures, Pope and Inyangete (1992) have tested whether cross-sectional differences in returns around announcement dates are statistically related to firm size, but also to the number of market makers, which is expected to increase with the amount of available information, and to the frequency of press comments. All these variables were highly significant, suggesting that the amount of information available before accounting announcements explains the information content of these announcements.

Elsharkawyand and Garrod (1996) tried to determine whether the positive association between price changes and the sign and magnitude of unexpected earnings was caused by sophisticated investors who are aware of the relevance of the disclosed numbers for valuation purposes, or whether the market reaction emanates from unsophisticated investors who react mechanically to reported earnings. The authors used two proxies proposed by Hand (1990) for measuring the level of investor sophistication: the percentage of each firm's stock held by non-institutional investors and the market value of the firm scaled by the difference between the market values of the largest and smallest firms in the sample. They used regression techniques to determine whether abnormal returns surrounding earnings announcements were related to the two proxies for investor sophistication, but also to the magnitude of unexpected earnings and to firm size. Using a sample of 511 UK companies listed on the London Stock Exchange between 1988 and 1991, they observed a positive investor sophistication effect that was significant even after having controlled for firm size. Their results showed that less sophisticated investors react to good news but tend to under-react to negative unexpected earnings in comparison with their sophisticated counterparts.

## **The post-announcement drift anomaly**

The efficient market hypothesis states that stock prices should react instantaneously and completely to any value-relevant information and that subsequent price changes should not be related to these reactions. In contradiction with this hypothesis, several empirical studies have shown that stock price reactions at earnings announcement dates are incomplete, because prices adjust only gradually to the new information. Therefore, significant abnormal returns can be achieved in the days following these announcements. Since these abnormal returns have the same sign as unexpected earnings, investors seem to under-react to the information contained in earnings. First documented by Ball and Brown (1968), this phenomenon, referred in the literature as the 'post-earnings-announcement drift', has been extensively analysed by Bernard and Thomas (1990) in the US.

Hew *et al.* (1996) investigated the post-earnings announcement drift in the UK. Using data from 206 companies listed on the London Stock Exchange, they found evidence of such a drift for both interim and final announcements. However, this drift was statistically insignificant for large companies. This led the authors to suggest that transaction costs, trading volumes or the amount of information available to investors before the announcement date may explain this post-earnings announcement anomaly. Isakov and Pérignon (2001) have studied the post-announcement drift on the implied volatility of Swiss call options over the 1989–98 period. They observed a persistent increase of implied volatility after the announcement day. Dividing their sample into a good news subsample and a bad news one using the abnormal return on the event date and the analysts' forecast errors, they found that the market reaction depends on whether the announcement can be regarded as conveying good or bad news.

In a study of the Finnish stock market reaction to earnings announcements, Kallunki (1996) observed that unexpected returns disappear after the announcement day in case of good news (i.e. positive unexpected earnings) but persist during the period that follows the announcement of bad news. Kallunki proposes a very simple and convincing explanation of this drift with regard to Finland. Since short-selling is forbidden in the Finnish stock market, he considers that the lag in stock price reactions in case of bad news is due to the fact that sophisticated traders can immediately take an advantage of good news in their investment decisions, which they cannot do in case of bad news because of the short-selling restrictions. Contrary to Kallunki's findings, Booth *et al.* (1996) report that the post-announcement drift of Finnish companies is higher in case of good news (i.e. positive earnings surprises). More interestingly, after splitting their sampled firms into earnings smoothers and non-smoothers, they show that the larger part of the drift comes from the market reaction to announcements of firms that do not smooth earnings. This suggests that the assimilation of the information conveyed by earnings is complicated when these are not smoothed, which can be a motivation for the income-smoothing practices largely documented in the literature.



## **The market response to accounting disclosures: synthesis and suggestions**

Studies summarized in this section provide several interesting results that shed light on the way investors process accounting information. These results indicate first that annual and interim announcements by European companies cause significant stock price changes and trading volume increases. If European capital markets are efficient in the sense that quoted prices do not significantly deviate from fundamental values, this evidence is consistent with the hypothesis that released accounting figures are useful to market participants. Moreover, the magnitude of stock price reactions is positively related to the level of surprise in the disclosed numbers and negatively related to the market value of firms. If market value is a good proxy for the amount of information available to market participants prior to accounting disclosures, the negative link between firm size and market reaction validates the hypothesis that numerous events related to earnings are publicly observed prior to accounting announcements. Therefore, at least for large firms, a substantial proportion of abnormal stock returns arises prior to the actual release of earnings. Finally, in contradiction with the efficient capital market hypothesis, several studies have shown that in Europe just like in the US, profitable strategies can be designed to benefit from abnormal returns that persist during the period following earnings announcements, particularly for small or medium-sized firms.

European studies reviewed in this section tend to concentrate on mandatory disclosures. However, in addition to mandatory reports, firms release more and more frequently voluntary information. Empirical evidence related to investors' reaction to voluntary disclosures by European firms might help understand the usefulness of such disclosures for anticipating firms' future prospects. Similarly, the Internet gives managers the opportunity to have a direct access to all investors and to disclose frequent updates of important information. Since the use of the Internet by firms and investors is likely to increase, future research aimed at analysing the information content of mandatory accounting disclosures in an environment where alternative continuously updated information is rapidly and easily available is of crucial importance.

Several recent US studies have reported a decline in the value relevance of accounting figures. Lev and Zarowin (1999) put forward the hypothesis that this decline may be due to the inability of financial statements to reflect in a timely manner the phenomenal technological innovations that occurred during the last twenty years. Studies of market reactions to accounting disclosures by firms strongly involved in technological innovations might help support or invalidate this argument. This could be done for instance by comparing security returns of firms that expend huge R&D outlays with those of firms not involved in R&D activities.

The growing literature devoted to earnings management offers another opportunity for future research on the information content of accounting figures. Several researchers such as Healy and Palepu (1993) or Subramanyam (1996)

hypothesize that firms choose accounting policies or include discretionary accruals in earnings to reveal management's private information about the firm's future prospects. If discretionary accruals are really informative, then abnormal stock returns around financial statement releases should be related to the sign and the proportion of earnings that result from manipulations. Comprehensive analyses of the link between abnormal returns, earnings surprise and manipulated accruals, as in Wilson's (1986) study, may shed more light on the motivations and stock price impacts of earnings management.

With regard to the post-announcement drift, it might be interesting to investigate the persistence of this anomaly in Europe since the profits resulting from trading strategies based on this anomaly should dissipate once they become apparent to investors. A recent study by Johnson and Schwartz (2000) shows that the post-announcement drift persists in the US among small firms and among firms with little or no analyst coverage. However, profit opportunities do not seem large enough to compensate the substantial costs related to the trading strategies simulated in this study.

### **3. THE RELATIONSHIP BETWEEN STOCK RETURNS AND ACCOUNTING NUMBERS**

Unlike event studies that concentrate on the market reaction to accounting disclosures over a short time interval, association studies analyse the relationship between stock returns and accounting data over a long period. While the former studies examine the role of accounting data in providing incremental information that may affect investors' perception of the firm's future prospects, the latter provide evidence of the role of these data as a summary of the events that have affected the firm during the reporting period. Contrary to market reaction studies, association studies do not infer any causal connection between accounting figures and stock prices. They do not even presume that market participants use accounting data in their valuation process. They only posit that if accounting data are good summary measures of the events incorporated in security prices, they are value-relevant because their use might provide a value of the firm that is close to its market value.

After a description of the theoretical and empirical foundations of association studies, this section summarizes the European evidence on the relationship between earnings and security returns. Research devoted to the value relevance of competing accounting practices, to the value relevance of various GAAP regimes and to the value relevance of accounting numbers other than earnings is successively reviewed. General comments and suggestions conclude the section.

#### **Empirical and theoretical foundations of association studies**

Association studies regress accounting figures on market data in order to test for any significant relationship. Ball and Brown (1968) in the US were the first to document an empirical relationship between earnings and stock returns. A study

by Martikainen *et al.* (1993) that duplicates the Ball and Brown study, provides a good illustration of such research. The authors analysed the daily abnormal stock returns of thirty firms listed on the Helsinki Stock Exchange, 300 days before and 300 days after their shareholders' annual meeting for the 1977–86 period. Each year, firms were split into two portfolios on the basis of the sign of their unexpected earnings. These were estimated in two different ways. First, assuming that earnings follow a random walk process, unexpected earnings were defined as the difference between two successive earnings. Second, considering that all reported earnings are influenced by the same economic factors, the change in earnings for each firm in the sample was regressed with the change for all other firms. The estimated regression coefficients were used to forecast the change in each firm's earnings. For the ten years under study, abnormal returns were calculated over the year ending with the earnings release. The results indicated that stock prices move in the same direction as the sign of unexpected earnings. At the dates of earnings releases, the positive unexpected earnings portfolio exhibited positive abnormal returns, and conversely. The fact that unexpected earnings, which are supposed to convey new accounting information, are positively related to abnormal returns, suggests that earnings capture a portion of the information used to value stocks. This suggests also that a large part of the information conveyed by earnings is already incorporated in stock prices when these are disclosed, probably because investors have access to various sources of information about firms' future prospects which are likely to be more timely than reported earnings.

Following Ball and Brown, numerous empirical studies have measured the intensity of the relation between earnings changes and security returns to determine how earnings changes summarize the information incorporated in stock prices. Most association studies do not refer explicitly to a valuation model to specify how or which accounting data should be related to security prices. However, Ohlson's (1995) model, which offers a formal linkage between valuation and accounting numbers, is more and more frequently cited as the theoretical foundation of such research. This model extends the residual income model proposed by Preinreich (1938). Defining stock prices as the present value of expected future dividends and assuming the clean surplus relation, the residual income model views the market value of security  $j$  at time  $t$ ,  $p_{j,t}$ , as the sum of two components: the book value of its equity at time  $t$  ( $b_{j,t}$ ) and the present value of its expected future abnormal earnings [ $E(x_{j,t+\tau}^a)$ ]:

$$p_{j,t} = b_{j,t} + \sum_{\tau=1}^{\infty} \left[ \frac{E(x_{j,t+\tau}^a)}{(1 + \rho)^\tau} \right] \quad (1)$$

where abnormal earnings are defined as the difference between reported earnings [ $x_{j,t+\tau}$ ] and a capital charge obtained by applying the discount rate [ $\rho$ ] to the book value of equity:

$$x_{j,t+\tau}^a = x_{j,t+\tau} - \rho b_{j,t+\tau}$$

Ohlson extends the residual income relation by imposing the following autoregressive behaviour on abnormal earnings:

$$x_{j,t+1}^a = \omega_j x_{j,t}^a + v_{j,t} + \varepsilon_{j,t+1} \quad (2)$$

$$v_{j,t+1} = \gamma_j v_{j,t} + \zeta_{j,t+1} \quad (3)$$

where  $v$  denotes information not incorporated in abnormal earnings,  $\omega$  is the persistence parameter of abnormal earnings,  $\gamma$  is the persistence parameter of the information not yet captured in earnings, and  $\varepsilon_t$  and  $\zeta_t$  are error terms. Equation (2) states that abnormal earnings follow a one-period lagged autoregressive process. Equation (3) implies that value-relevant information not incorporated in accounting figures will be gradually integrated into earnings following another one-period lagged autoregressive process. Combining the residual income model given by (1) with the information dynamics given by (2) and (3) yields the following valuation function:

$$p_{j,t} = b_{j,t} + \alpha_{1j} x_{j,t}^a + \alpha_{2j} v_{j,t} \quad (4)$$

where  $\alpha_{1j} = \omega_j / (1 + \rho - \omega_j)$  and  $\alpha_{2j} = (1 + \rho) / (1 + \rho - \omega_j)(1 + \rho - \gamma_j)$ . The empirical form of this model is given by the following relation:

$$p_{j,t} = a_0 + a_1 b_{j,t} + a_2 x_{j,t} + \mu_{j,t}^1 \quad (5)$$

where  $a_1$  and  $a_2$  are regression coefficients,  $a_0$  is the intercept and  $\mu_{j,t}^1$  is an error term.

Although this relation provides strong motivation for regressing raw accounting data on stock prices, it can be rewritten to provide a theoretical basis for regressions of changes in accounting figures on returns. Replacing  $x_{j,t}^a$  with  $[x_{j,t} - \rho b_{j,t}]$ , invoking the clean surplus relation, taking first differences and dividing both sides of the equation by the beginning-of-period price  $p_{j,t-1}$ , equation (4) can be restated as

$$\begin{aligned} \frac{p_{j,t} - p_{j,t-1} + d_{j,t}}{p_{j,t-1}} &= (1 - \rho\alpha_1) \frac{x_{j,t}}{p_{j,t-1}} + (1 + \rho)\alpha_1 \frac{x_{j,t} - x_{j,t-1}}{p_{j,t-1}} \\ &+ (1 + \rho)\alpha_1 \frac{d_{j,t-1}}{p_{j,t-1}} + \alpha_2 \frac{v_{j,t} - v_{j,t-1}}{p_{j,t-1}} \end{aligned} \quad (6)$$

The empirical form of this relation is given by

$$R_{j,t} = \beta_0 + \beta_1 \frac{x_{j,t}}{p_{j,t-1}} + \beta_2 \frac{\Delta x_{j,t}}{p_{j,t-1}} + \mu_{j,t}^2 \quad (7)$$

where  $R_{j,t}$  is the rate of return of security  $j$  for the period  $t$ ,  $\Delta x_{j,t}$  denotes earnings changes between period  $t$  and period  $t - 1$ ,  $\beta_1$  and  $\beta_2$  are regression coefficients,  $\beta_0$  is the intercept and  $\mu_{j,t}^2$  is an error term.

Equations (5) and (7) suggest regressions of accounting figures on market data. The strength of the association, as given by the regression  $R$ -squares, is often taken as a measure of the value relevance of the accounting numbers under study. A low association ( $R$ -square  $\approx 0$ ) suggests that these are useless to estimate prices or returns. Conversely, a strong association ( $R$ -square  $\approx 1$ ) means that any investor who would have to value a company from its accounting figures only, would obtain a price close to the market value. While equation (5) suggests regressions of the levels of book value and earnings per share on stock prices (price regressions), equation (7) leads to regress earnings and changes in earnings deflated by beginning-of-period stock prices on returns (return regressions). As a matter of fact, price regressions and return regressions are both commonly used to analyse the relation between market and accounting data. However, as shown by Brown *et al.* (1999), statistical associations inferred from price regressions suffer from a spurious effect of scale because large security prices tend to be mechanically related to large book value and large earnings per share, and conversely. Consequently, the value relevance measured by  $R$ -squares of price regressions are unwisely overstated, and comparisons of  $R$ -squares to infer changes or differences in value relevance are invalid if there is no explicit control for this scale effect. In contrast, return regressions are not affected by potentially serious scale problems because stock data and accounting figures per share are all scaled by beginning-of-period stock prices. Therefore, empirical studies should preferably rely on returns specifications. This is why the following review of European association studies concentrates mainly on results inferred from return regressions.

### **The association between earnings and security returns: the accumulated evidence**

The relation between earnings and contemporaneous security returns has been analysed with data from most European stock exchanges. Results show that, in Europe like in the US,<sup>1</sup> this relation is weak, suggesting that reported earnings do not provide good summary measures of the value-relevant events that have been incorporated in stock prices during the reporting period. Even if coefficients obtained by regressing earnings and earnings changes scaled by beginning-of-period stock prices on stock returns are generally statistically significant,  $R$ -squares are relatively low. In the UK, Strong (1993) found an average  $R$ -square of about 10%, suggesting that only 10% of the cross-sectional variance of returns is explained by the cross-sectional variance of earnings. With regard to Germany, Harris *et al.* (1994) obtained  $R$ -squares that range from 7% to 17%. In Denmark, Plenborg (1998) reported yearly  $R$ -squares varying from 1% to 29% between 1985 and 1991. From a sample of French firms over the 1981–90 period,

Dumontier and Labelle (1998) obtained *R*-squares ranging from 1% to 49% depending on the year under consideration. Vafeas *et al.* (1998) obtained similar results on a sample of firms listed on the Cyprus Stock Exchange.

The relatively low association observed between earnings and stock returns suggests that earnings capture only a weak proportion of the information incorporated in security prices. It is often argued that information included in stock prices is richer than the one reflected by earnings because investors focus on all events that affect expected future cash flows, while earnings incorporate only those that have met the conditions for accounting recognition. Since relevant events that are not captured in contemporaneous earnings should normally be captured in subsequent periods, there should be a lag in the inclusion of new information into earnings, and stock prices should be more prompt than earnings in reflecting new information. This recognition lag causes both an errors-in-variable problem and an omitted variable problem because earnings do not reflect some information captured in current returns, whereas they reflect some information that was captured in prior returns. Since this lag is potentially negatively correlated with earnings, *R*-squares of regressions of current returns with contemporaneous earnings are biased toward zero.

To correct for this lag effect, Dumontier and Labelle (1998), following Easton *et al.* (1992) in the US, have expanded both the returns and earnings windows by regressing multiple-year returns on multiple-year earnings. They showed that the correlation between earnings and returns improves with increases in the time interval under consideration. They obtained average *R*-squares ranging from 15% for a one-year interval to 28% for a two-year interval and to 39% for a five-year interval. In the same vein, Cormier *et al.* (2000) regressed the market returns of a sample of Swiss firms not only on contemporaneous earnings, but also on the previous and following year earnings. Their results indicate that lead, lag and contemporaneous earnings are all significantly related to returns. Moreover, when lead and lag earnings are added to contemporaneous earnings as explanatory variables for returns, *R*-squares strongly increase from 37% to 52%. This procedure is, however, not free of bias because of the well-documented positive serial correlation in earnings. Instead of using previous and subsequent earnings as additional explanatory variables for returns, Beaver *et al.* (1980) suggest to regress earnings on both current and past returns. Such 'reverse regressions' are less likely to suffer from multicollinearity since stock returns are supposed to be uncorrelated through time if capital markets are efficient.

Pope and Walker (1999) investigated extensively the magnitude of the recognition lag by analysing the effect of conservatism in accounting on the timeliness of earnings. They proposed a formal analysis of the different speeds of recognition of good and bad news in order to capture two distinct consequences of conservative accounting: delay in reporting good news and early recognition of bad news. Following Basu (1997), they took security returns as an indicator of the bad or good news that have affected the firm during the reporting period. Because stock prices are not likely to anticipate events incorporated in future earnings

more than three years ahead, they used the following reverse regression to determine how quickly accounting data reflect information incorporated in stock prices:

$$\frac{x_t}{p_{t-4}} = \gamma_0 + \gamma_1 D_t + \sum_{\tau=0}^3 \lambda_\tau R_{t-\tau} + \sum_{\tau=0}^3 \theta_\tau R_{t-\tau} D_{t-\tau} + \mu_t$$

where  $x_t$  and  $p_t$  denote respectively reported earnings of period  $t$  and security price at the end of period  $t$ ;  $R_{t-\tau}$  is equal to  $(p_{t-\tau} - p_{t-(\tau-1)})/p_{t-4}$ ;  $D_{t-\tau}$  is a dummy variable for year  $t - \tau$  which takes the value one in case of bad news (i.e. if  $R_{t-\tau}$  is less than zero) and zero otherwise;  $\gamma_0$ ,  $\gamma_1$ ,  $\lambda_\tau$  and  $\theta_\tau$  are regression coefficients. The  $\lambda_\tau$  and  $\theta_\tau$  coefficients are associated respectively to good and bad news,  $\mu_t$  is an error term.

Developing a formal analysis, Pope and Walker demonstrated that  $\lambda_\tau$  coefficients should increase and  $\theta_\tau$  should decrease as the lag increases. Based on a sample of UK and US listed firms over the period 1976–96, their results showed that  $\lambda_\tau$  coefficients are statistically significant and increase from lag zero to lag one, suggesting that most good news is delayed in earnings with a lag of one year. With regard to  $\theta_\tau$  coefficients, they are significant and they decrease until lag two, suggesting that bad news is anticipated in earnings by up to two years.

Lubberink and Huijgen (2002) hypothesized that earnings conservatism reflects not only financial reporting standards, but also managers' preferences. They stated that risk-averse managers, who are more concerned about their reputation among outside parties, report earnings more conservative than less risk-averse managers in order to lower the likelihood of conflict about the distribution of the firms' cash flows. To assess whether earnings reported by risk-averse managers are more conservative than those reported by non-risk-averse ones, Lubberink and Huijgen used a regression model similar to the one developed by Pope and Walker. Assuming that the coefficient of a regression of time-series levels of compensation on time-series variance of compensations provides a good proxy for managers' risk aversion, they partitioned their data into two distinct groups. In accordance with their intuition, their results obtained on a sample of listed Dutch companies, show that firms employing the most risk-averse managers report earnings significantly more conservative than firms with the less risk-averse managers. More precisely, differences in earnings conservatism between the two groups are mainly related to the fact that more risk-averse managers tend to anticipate the recognition of bad news: whereas the good news coefficients are significant for the two groups, the bad news ones are significant for the risk-averse group only.

Another explanation for the low association between earnings and returns is that negative earnings are not value-relevant because losses are not expected to perpetuate indefinitely. Consequently, sampled firms that report losses tend to weaken the strength of the association between earnings and returns. To validate

this assumption already tested by Hayn (1995) in the US, Martikainen *et al.* (1997) split a sample of 498 earnings reported by Finnish companies into a sub-sample of positive earnings and a sub-sample of losses. While positive earnings were positively related to returns, losses were statistically insignificant in explaining returns. Consequently, the exclusion of loss observations strengthens the estimated relation between earnings and returns, probably because losses do not provide information about the firm's ability to generate future cash flows.

### **The value relevance of competing accounting practices**

As explained above, the strength of the association between earnings and returns (i.e. *R*-squares obtained in regressing returns with earnings) can be taken as a measure of the value relevance of accounting data. Postulating that the higher the value relevance, the better the accounting numbers, several empirical studies used this simple criterion to determine the 'best' accounting practice among several competing alternatives.

Since German companies financing is based primarily on self-financing and private borrowings rather than on equity issues or public debts, German GAAP tend to focus more on the protection of lenders than on the information needs of investors. To remedy this situation, the German Financial Analysts' Association (*DVFA – Deutscher Vereinigung für Finanzanalyse und Anlageberatung*) developed an earnings metric aimed at reflecting the profitability of companies' ongoing operations without being contaminated by non-recurring events or by the exercise of accounting options related to tax purposes. Using the association methodology, Harris *et al.* (1994) and Booth *et al.* (1997) examined whether *DVFA* earnings provide information in addition to that included in earnings reported under German GAAP. Since regressions of returns on *DVFA* earnings exhibit the highest *R*-squares, both studies conclude that *DVFA* earnings are more value-relevant than German GAAP profits. In the same vein, Martikainen *et al.* (1997) tested the value relevance of earnings adjusted on the basis of the Finnish Committee for Corporate Analysis Recommendations. These statements stipulate to remove certain items from reported earnings in order to increase their relevance. Contrary to the German evidence, the results of this study indicate that adjusted earnings do not contain incremental information with respect to all-inclusive earnings.

In an attempt to test the usefulness of IAS, Niskanen *et al.* (1994) estimated IAS-based earnings of a sample of Finnish firms by adjusting reported earnings for six important differences between IAS and Finnish GAAP. Both reported and adjusted earnings were then entered in a regression with stock returns. Results indicated that adjusted earnings exhibit statistically significant coefficients, which gives support to the hypothesis that IAS-based earnings convey incremental information over those based on Finnish GAAP. IAS (or US GAAP) disclosure requirements exceed those of most European countries. The adoption of these standards may thus contribute to reduce information



asymmetry, especially for firms from low-regulated countries. This hypothesis is validated by Leuz and Verrecchia (2000) who, after controlling for various firm characteristics, found that German companies which switched to IAS or US GAAP exhibit lower bid-ask spreads and higher share turnover than firms using German GAAP only.

Nevertheless, the assumption can be made that IAS-based earnings are more useful to foreign than to local investors. A characteristic of the Finnish market gave Kinnunen *et al.* (2000) the opportunity to test this hypothesis. From 1984 to 1992, the Finnish stock market was segmented into two categories of shares: one restricted to domestic investors, the other available to anybody, irrespective of its nationality. In order to isolate the respective information content of IAS and local earnings for each category of investors, Kinnunen *et al.* conducted separate regressions with returns of restricted and unrestricted shares. Their results showed that both IAS-based and local earnings are informative to foreign investors but that Finnish investors find information content in local earnings only. This led the authors to the conclusion that restating local GAAP earnings to conform to the IAS helps to meet foreign investors' information needs, but is of limited use to domestic investors.

Most European corporate annual reports include consolidated statements and parent company statements. Both consolidated and parent company earnings are potentially informative since parent earnings provide information about the ability of the company to pay dividends while consolidated earnings reflect the performance of the entire economic entity. This raises the question of whether consolidated earnings provide additional value-relevant information with regard to parent company earnings. Harris *et al.* (1994) hypothesized that the strength of the association between earnings and returns is positively related to the degree of consolidation. Apportioning their sample of German firms among parent-only, domestic-only and full consolidation, they showed that the explanatory power of earnings for returns increases with the level of consolidation. Using a sample of Finnish companies, Niskanen *et al.* (1998) found evidence that consolidated earnings have an incremental information content beyond that of parent companies, but the reverse was not true. These findings indicate that consolidation improves the value relevance of earnings. They suggest that parent earnings have no interest in terms of value relevance when consolidated earnings are disclosed. In Spain, as in most European countries, consolidated financial statements must report separately the minority interest component of earnings and equity. Using a sample of Spanish companies listed in the Madrid Stock Exchange between 1991 and 1997, Abad *et al.* (2000) investigated the value relevance of these requirements. Their results support those obtained in Finland and in Germany since they show that consolidated earnings are more strongly associated with security data than parent company earnings. However, they found no support for the value relevance of the minority interest portion of earnings and equity. This leads them to question the usefulness of requirements related to minority interest reporting.

## The value relevance of different GAAP regimes

Several studies have focused on international differences in the propensity of earnings to reflect value-relevant information. Using a sample of seventeen countries to obtain evidence from a variety of accounting standards and information environments, Alford *et al.* (1993) provided a country-by-country comparison of the value relevance of earnings between US and non-US firms. They observed considerable variation in the explanatory power of earnings for contemporaneous returns across the countries under study. Regarding Europe, by comparing the *R*-squares of country regressions, they observed that earnings from France, the Netherlands and the United Kingdom were more value-relevant and more timely than US earnings. In contrast, those from Denmark, Germany, Italy and Sweden were less timely and reflected less value-relevant information than US earnings. Results from Belgium, Ireland, Norway and Switzerland were inconclusive.

Focusing on accounting practices in France, Germany and the United Kingdom, Joos and Lang (1994) found evidence of significant differences in the stock market valuation of accounting data. These three countries were selected to permit a comparison of the effects of two extreme and one intermediate example of alternative approaches to earnings measurement. While the UK accounting model traditionally focuses on equity holders, allows discretion in the preparation of financial statements and dissociates tax and financial reporting, the German model concentrates on debt holders, codifies reporting requirements and imposes a strong link between financial and tax reporting. Although the French model is basically close to the German one, it tends to draw near to the UK model in a number of respects. However, in so far as the Fourth and the Seventh Directives of the European Union have, to some extent, harmonized accounting practices throughout Europe, differences in the degree of association between stock returns and earnings were expected to be lower after these directives have been implemented. Surprisingly, while UK accounting practices are significantly more investor-oriented than French or German ones, *R*-squares for the pre-directives period were higher in France and Germany than in the UK, which invalidates the assumption that earnings reported in the UK were more value-relevant than those of French and German companies. Moreover, results for the post-directives period do not show that these differences have been reduced following the implementation of the directives. Regarding Germany, Harris *et al.* (1994) confirmed these results. They did not report a significant change in the explanatory power of earnings after the adoption of the new Accounting Law that changed the German reporting system by incorporating the Fourth and Seventh European Directives.

Using data from sixteen countries, Ali and Hwang (2000) regressed market returns with scaled earnings to explore the impact of several country-specific factors on the value-relevance of accounting data. Their results show that the degree of association between security returns and earnings is lower in countries

with bank-oriented (as opposed to market-oriented) financial systems, in countries where private-sector bodies are not involved in the standard-setting process and, more generally in countries which belong to the continental model, as defined by Mueller *et al.* (1994). More precisely, earnings in bank-oriented countries seem more conservative and consequently less timely than those in market-oriented ones.

Focusing on differences between US and UK GAAP, Pope and Walker (1999) provided evidence that apparent differences in conservatism between these two regimes are sensitive to the inclusion or exclusion of extraordinary items. They showed that US earnings measured before and after extraordinary items have similar timeliness properties. In contrast, UK earnings are significantly less timely when measured before extraordinary items. Consequently, US earnings before extraordinary items are more timely than UK ones. However, UK earnings after extraordinary items are more timely than US ones, especially with respect to bad news. These results suggest that inferences regarding the relative timeliness of earnings under different regimes are highly sensitive to the earnings measure analysed. Therefore, the conclusions of international studies reported above should be regarded cautiously.

### **The value relevance of non-earnings data**

Several studies have investigated the information provided by non-earnings data. A first set of these studies focused on the components of earnings commonly reported by firms in order to determine whether the decomposition of earnings provides incremental value-relevant information beyond the bottom-line earnings. With regard to Europe, the evidence is somewhat conflicting. On the one hand, Strong and Walker (1993) support the view that the decomposition of earnings is useful in the UK since earnings components tend to be significantly related to security returns. Their results show that partitioning earnings into pre-exceptional, exceptional and extraordinary components improves the association between earnings and stock returns. On the other hand, Giner and Reverte (1999) provide evidence that corporate taxes are the only earnings component that is related to security prices in Spain. They find that extraordinary items do not exhibit real information content. However, a contextual analysis of their results suggests that the decomposition of earnings may be particularly useful for small and for risky companies.

One specific feature of financial accounting is accrual adjustments that are added to or subtracted from cash flows from operations to obtain earnings. In order to determine the respective value relevance of cash flows and earnings, several researchers have studied which of the former or of the latter is the most highly correlated with stock prices. In the UK, Board and Day (1989) and Ali and Pope (1995) have provided evidence that earnings dominate cash flows in the sense that cash flows do not have incremental information content beyond earnings. Using a sample of UK companies, Clubb (1995) showed that cash

flows from operations, accruals and accounting earnings are all positively related to stock returns, but accrual adjustments appear to possess information content beyond that reflected by cash flows and earnings. Following Dechow (1994), Charitou (1997) hypothesizes that the value-relevance of cash flows with respect to that of earnings depends on (a) the magnitude of accrual adjustments, since timing and matching problems in cash flows are minimized when accrual adjustments are small; (b) the length of the firm's operating cycle, since the shorter the operating cycle, the smaller the working capital requirements and consequently the smaller the volatility of accruals; and (c) the measurement interval under consideration, since the longer the measurement interval, the smaller the timing and matching problems in cash flows. Charitou's results are in conformity with these hypotheses. Using a sample of listed UK companies, he observed that earnings are more highly correlated with stock returns than cash flows for short measurement intervals, but earnings and cash flows tend to exhibit the same level of correlation with returns when measurement intervals increase, when accruals are relatively small or when firms have short operating cycles. In the same vein, Green (1999) showed that the value-relevance of UK cash flows was unsurprisingly related to the correlation between accounting earnings and cash flows from operations.

Considering that accruals may be affected by arbitrary estimations due to management's discretion over their recognition, a new stream of research uses association studies to determine whether discretionary accruals are aimed at manipulating earnings opportunistically or whether these accruals convey managers' private information about the firm's prospects. If earnings are manipulated through the use of discretionary accruals, they should not reflect accurately the firm's ability to generate future cash flows and their correlation with returns should be low. Conversely, if accruals are manipulated in order to report more value-relevant earnings, then discretionary component should be positively related to stock returns. With regard to Switzerland, results reported by Cormier *et al.* (2000) suggest that discretionary accruals are informative, not opportunistic. By splitting earnings into cash flow from operations, non-discretionary and discretionary accruals, the authors showed that these three components of earnings are all significantly related to stock returns. The statistically positive relationship between returns and discretionary accruals confirms the value relevance and the information content of the discretionary component of accruals.

Earnings obviously are not the only potential relevant accounting data. Other accounting variables are likely to reflect events that have affected the firm value during the reporting period. Using a sample of twenty-eight Finnish companies over the period 1975–86, Martikainen (1993) investigated the relationship between stock returns and various accounting data that served as proxies for four characteristics that determine the conditions under which firms generate future cash flows. These characteristics are profitability, financial leverage, operating leverage and growth. They resulted from a principal component

analysis aimed at reducing original data into a smaller set of common factors. Results based on purely industrial firms indicate that profitability and financial leverage are the two characteristics the most strongly related to returns. Other characteristics do not affect returns. This led Martikainen to conclude that the calculation of a large number of accounting raw data or ratios is of little interest and that analysts should concentrate on a relatively low number of key data.

Using a sample of UK industrial companies that did not change their financial year-end between 1983 and 1992, Al-Debie and Walker (1999) examined the incremental value relevance of various fundamentals beyond that of accounting earnings. Following Lev and Thiagarajan (1993), they selected seven non-earnings data which signal abnormal changes in stocks of finished goods, debtors, capital expenditures, research and development expenses, gross margin, distribution and administration expenses or labour force. Moreover, since the value of these data depends both on the firm's industry and the state of the economy, Al-Debie and Walker adopted a conditional approach by using regression techniques that allow regression parameters to vary with each firm's industry and with the state of the economy. They considered fifteen industries and three states of the UK economy defined on the basis of the inflation rate, the real GNP growth and the unemployment rate. While their basic model with a constant intercept and a constant earnings variable provided an  $R$ -square of only 15%, they obtained  $R$ -squares of 36%, 40% and 43% when they allowed regression parameters to vary with the state of the economy, the industry, or with both variables. These results show that the inclusion of non-earnings variables increases strongly the correlation between returns and accounting data. They also indicate that allowing the regression parameters associated with accounting data to vary with various firms' characteristics improves significantly the performance of regression models. This confirms the need to adopt a conditional approach in association studies.

### **Association studies: synthesis and suggestions**

Studies described in this section have investigated the ability of accounting data to summarize the relevant events that have affected the firm during the reporting period. They provide at least four interesting results. First, they show that the relation between security returns and contemporaneous earnings is low. Second, they validate the relevance of accrual accounting. Third, they find that consolidated accounting data are more value-relevant than non-consolidated ones. Fourth, they suggest that non-earnings data reported in financial statements help better perceive the events incorporated in security prices.

The most important result of association studies is certainly the low level of association between security returns and contemporaneous earnings. The lack of timeliness of earnings due to financial reporting conservatism is likely to explain a large part of this weak value relevance. If the conclusions of international

studies are not significantly biased by differences in earnings measurement, it is clear that reported earnings in Anglo-Saxon countries exhibit greater timeliness than reported earnings in countries which belong to the continental accounting model. Moreover, in spite of the low association between earnings and returns, European association studies provide evidence on the usefulness of accrual adjustments. All studies devoted to the relative usefulness of cash flows and earnings show that earnings dominate cash flows in the sense that earnings and accrual adjustments possess information beyond that reflected in cash flows. In the same way, it is clear that consolidated accounting data have more value relevance than parent-company ones. Lastly, even if a large majority of association studies have focused on the bottom-line earnings only, studies that take various non-earnings accounting numbers into consideration show that these are incrementally associated with contemporaneous security returns.

The foundations of association studies, and consequently inferences drawn from their results, are however subject to several limitations. The most obvious is the validity of the efficient capital market hypothesis and consequently the validity of stock data as a proxy for value-relevant events that affect firms. If stock prices are assumed to represent fundamental values, then there is no doubt that a low relation between accounting figures and market data is a proof of the weak value relevance of accounting data. However, several recent studies, especially in the emerging field of behavioural finance, suggest that stock prices reflect mostly investors' myopic behaviour, so that stock prices might not be a reliable benchmark to analyse the value relevance of accounting data. Future research should address this limitation and investigate the value relevance of accounting figures with other benchmarks than market data.

Another limitation of association studies is that they concentrate mainly on bottom-line earnings without analysing the value relevance of other accounting data. Yet, several accounting numbers other than earnings can help investors perceive the value-relevant events that have affected the firm. Those numbers should be more extensively explored. Since their value relevance is likely to be related to the firm environment, future research should concentrate on the value relevance of specific accounting data under various contexts that characterize firms.

#### **4. THE USE OF ACCOUNTING DATA BY INVESTORS AND THE INFLUENCE OF CAPITAL MARKETS ON ACCOUNTING DECISIONS**

Studies described above provide indirect tests of the usefulness of accounting information for valuation purposes in so far as they do not analyse directly how investors process accounting data. They only focus on stock price reactions induced by accounting disclosures and on the association between accounting and market data. However, the usefulness of accounting numbers for market participants can also be assessed directly by questioning investors themselves. Several

European studies have adopted this latter approach. These are reviewed in the first part of this section. Moreover, even if market-based accounting research concentrates mainly on the usefulness of accounting data for firm valuation, a few studies have examined whether capital markets exercise pressures on accounting decisions of listed companies. Their main findings are explored in the last part of this section.

### **Direct tests of the usefulness of accounting information**

Studies devoted to the use of accounting data by market participants have three main purposes. First, they analyse the importance of accounting figures with respect to other sources of information. Second, they examine the valuation techniques effectively used by investment professionals in order to assess whether they are based on accounting numbers or not. And last, they try to determine whether firms favour decisions which maximize accounting measures of profit rather than cash flows, because of the importance of earnings for market participants.

Day (1986) reports a laboratory experiment on the use of financial statements by UK investment analysts. Two sets of accounts were submitted to fifteen professionals who had to perform their initial review as if they were studying them for the first time. The participants were asked to think aloud so that a tape-recording could be made. The results tend to confirm that financial statements are seen by investment analysts as only one source of information, which does not generally contain price-sensitive information but which is nevertheless useful as a reference document. Barker (1998) expanded this analysis to finance directors and fund managers. On the basis of questionnaires and semi-structured interviews, he obtained evidence on how investment professionals perceive the role of accounting information. Annual reports and financial statements appear to be only a secondary source of information for market participants, after direct contacts or meetings with senior company management. This observation contrasts with a previous study by Arnold and Moizer (1984) which concluded that financial statements are the primary source of information for analysts. It is also in contradiction with a questionnaire study by Vergoossen (1993) which showed that accounting data are considered as the most important source of information by Dutch investment analysts.

As pointed out by Breton and Taffler (2001: 92), 'asking analysts or investors directly about the relative importance of different types of information may provide little real insight into what they use in practice'. Rather than considering financial statements globally, it may thus be more judicious to focus on data that are supposed to be the most relevant for security valuation. This was done by Barker (2000) who interviewed thirty-two British analysts on their use of reported earnings. He observed that analysts attach great importance to earnings announcements and particularly to deviations with forecasts, but their use and interpretation of accounting information is rather superficial. In particular,

analysts seem to have a limited understanding of underlying issues of recognition and measurement, and more curiously of the interactions between earnings and the balance sheet items. This observation suggests that analysts, and more generally most market participants, may be fixated on accounting earnings and unable to detect earnings management. This issue was addressed by Vergoossen (1997) who examined the reports written by Dutch investment analysts about companies that made changes in their accounting policies. Two levels of fixation were defined: fixation at a strong level when analysts did not mention accounting changes in their reports, and fixation at a weak level when they noted these changes but did not discuss their quantitative effects on accounting figures. A fixation index was computed for each accounting change, ranging from 0 (no analyst was fixated) to 1 (all analysts were fixated at the strong level). The results showed an extreme diversity of fixation, values of the index varying from 0 to 0.867. These studies suggest that although annual reports are seen as a primary source of information by investors, numerous market participants are likely not able to correctly analyse the accounting information. This could incite some firms to manipulate accounting figures opportunistically.

Indications on the usefulness of accounting data may also be drawn from the examination of valuation techniques used by investment professionals. If analysts base their recommendations primarily on methods involving accounting data; i.e. fundamental analysis, accounting information can be considered as useful to the market participants. Adversely, if they use mainly non-accounting methods, as for example technical analysis or beta analysis, this will be an indication that accounting data are not particularly useful to investors. A questionnaire study by Arnold and Moizer (1984) clearly shows that fundamental analysis is the technique most frequently used by UK investment analysts. The study reports that 90% of respondents view fundamental analysis as 'extremely useful' or 'very useful', while the corresponding percentages are 16% for technical analysis and 5% for beta analysis. Moreover, the results also show that analysts base their recommendations essentially on price-earnings (PE) ratios, which emphasizes the role of earnings in stock valuation. This latter observation is consistent with a more recent study by Barker (1998) which reveals that British analysts and fund managers view the PE ratio and the dividend yield as the most important valuation methods. Olbert (1994) repeated Arnold and Moizer's analysis in Sweden. He also found that fundamental analysis was the most frequently used technique in stock valuation and noted an extensive use of PE ratios. A similar study conducted by Pike *et al.* (1993) in the UK and Germany confirms these findings: although German analysts place significantly more emphasis on technical analysis, fundamental analysis using PE ratios remains the dominant method in both countries. This result is consistent with Vergoossen's study (1993) that emphasizes the importance of fundamental analysis in The Netherlands. All these studies confirm the major role played by accounting data, and particularly earnings, in the way analysts appraise investments. They also clearly show that approaches



recommended in the academic literature, such as discounted future cash flows, are still largely less popular than traditional techniques, even among investment professionals.

The importance of earnings for market participants may incite companies to favour decisions that maximize accounting measures of profit rather than cash flows. Although there is limited evidence on this matter, several European studies give some support to this conjecture. Using data from forty UK companies which made recent debt or equity issues, Davidson and Mallin (1998) compared the actual earnings-per-share (EPS) to the corresponding amount which would have been obtained if the company had chosen the other type of financing. As expected, results show that the type of the selected capital issue was that which gave the highest EPS, after controlling for other factors such as leverage and industry classification. The authors interpret this as an evidence of functional fixation on EPS. Collison *et al.* (1996) adopted a quite different methodology to assess how managers' decisions may be affected by their perceptions of investors' reasoning. They sent finance directors of the largest UK companies a questionnaire with several statements such as 'Top management will not accept proposals for increasing expenditure in the following separate categories if it results in a significant fall in profits from the previous year: (a) Research and development, (b) Advertising, (c) Training'. Respondents were asked to mention their relative agreement with each statement on a Likert scale. An analysis of the responses led the authors to conclude that managers consider that investors place heavy emphasis on earnings, which could lead them to favour the short-run, to the detriment of longer-term progress of their business. This corroborates the assumption of short-termism frequently expressed against market participants. In an attempt to test the validity of this assumption, Goodacre and McGrath (1997) conducted an experimental study in which a sample of UK investment analysts were asked to forecast earnings and market values of two companies, based on simulated financial statements. These firms were identical in all respects except for the method used to account for R&D expenditures. The mean market value estimates for the companies were almost identical, a result which is inconsistent with the hypothesis of functional fixation. In another experiment, the only difference between the two companies was that one invested in tangible fixed assets rather than in R&D. In that case, analysts attributed a higher value to the R&D spender, which is inconsistent with the short-termism hypothesis. The authors conclude that the managers' preoccupation with short-run earnings is not as obvious as is often ascertained.

Research on the influence of accounting considerations on managerial decisions is scarce, probably because decisions that would have resulted from other accounting treatments are not observable. This problem could be circumvented with the use of other methodological approaches, in particular interviews with managers. Such research should be encouraged because of its high value for standard setters who, before adopting a new accounting regulation, must anticipate its potential effects on firms' decisions.

## **The influence of market pressure on accounting decisions**

Several empirical studies have examined the influence of market pressures on accounting choices and the disclosure policy of firms. These pressures come from investors as well as market authorities. On the one hand, listed companies must meet the information needs of market participants, and thus disclose more information than non-listed ones. For example, it is generally assumed that an extensive disclosure policy may contribute to lower the company's cost of capital. On the other hand, listed firms must adapt their disclosure policy to comply with the requirements of market authorities. The pressure for larger and specific disclosures is even stronger for firms that are listed on several markets since these firms have to comply with different market regulations and meet the needs of a larger set of investors.

Although accounting decisions may be influenced by many variables such as ownership diffusion or analyst following, listing status is probably the best proxy for market pressures since it is the only variable that captures both the influence of investors and market authorities. Empirically, its relationship with voluntary disclosure is clearly established. Firth (1979) in the UK, Cooke (1989) in Sweden, Wallace *et al.* (1994) in Spain, Patton and Zelenka (1997) in the Czech Republic, all found that the extent of disclosure of listed firms does exceed that of unlisted companies. With regard to international listing, Meek *et al.* (1995) studied voluntary annual report disclosures by a sample of multinational companies from the US, the UK and continental Europe. They also found evidence of larger disclosure by firms listed on several markets. Herrmann and Thomas (1996) for their part, focused on segment reporting. Their study based on annual reports of 223 companies from ten EU countries shows that the quality of segment reporting (as measured by the number of items disclosed per geographical segment) is better for firms listed on multiple stock exchanges than for those listed on their domestic market only. Moreover, Dumontier and Raffournier (1998) and Murphy (1999) have demonstrated that Swiss firms listed on foreign markets are more likely to voluntarily adopt IAS than those listed in Switzerland only. To the extent that IASB disclosure requirements exceed largely those of the Swiss Stock Exchange, this result can be considered as an evidence of the influence of market pressure on voluntary disclosures.

For a few years, there has been a growing interest for studying whether the disclosure requirements of stock exchange authorities affect the management decisions of companies. Muller (1999) provides a good example of such research in the accounting field. UK firms are used to write-off goodwill to equity in the year of acquisition rather than capitalize it on the balance sheet. The problem is that the London Stock Exchange (LSE) uses financial ratios with reported net assets as the denominator to determine whether acquisitions and disposals require shareholder approval. Firms with active merger or disposal plans should thus be reluctant to write-off goodwill against reserves, unless they can limit the impact of this treatment on equity. A solution was to separate the value of brand names

from goodwill and capitalize this amount. Muller formulated thus the hypothesis that the recognition of brand names was positively correlated with the number of future transactions that could avoid LSE-mandated shareholder approval through brand name recognition. The empirical findings support this hypothesis, suggesting that capital markets may have a significant impact on the accounting choices made by listed firms.

## **5. CONCLUDING REMARKS**

This short survey highlights the variety of issues addressed by European studies devoted to the relationship between financial accounting and capital markets. Like in the US, the empirical evidence relates mainly on the informational perspective of accounting figures that holds that accounting data are relevant for valuation purposes if they reflect information that influences stock prices or if they provide incremental information that affects investors' perception of the firm. Overall, this type of research is aimed at explaining how accounting numbers and stock returns are related. As suggested by Healy and Palepu (1993), however, these studies provide little evidence useful to standard-setting bodies for the assessment of accounting standards or to managers in forming disclosure strategies to communicate effectively with investors. Future research should address this limitation and respond to questions such as: What types of disclosures should firms provide? Which are useful and credible, which are not? Moreover, instead of focusing on large samples of heterogeneous firms without taking specific contexts into consideration such as the industry, the economic environment or the life-cycle stage of firms, future empirical studies should concentrate on contextual research. Such analyses, based on a judicious partitioning of firms, should improve our understanding of the value relevance of individual financial statement items under specific circumstances. In the same way, market-based research generally focuses on accounting data even though investors also use non-accounting information for valuing companies. The relation between non-accounting data and stock prices represents thus a potentially fruitful area for future research that deserves a more extensive exploration.

Although European capital markets have theoretically been unified, important differences remain across countries. This provides numerous research opportunities. A low association between market returns and accounting numbers is generally considered as an evidence that accounting information is not relevant for security pricing, but it may also be possible that prices do not reflect the true value of firms because stock markets are not as efficient as generally assumed. Comparative studies involving several markets would thus be useful inasmuch as they would make it possible to measure the influence of different levels of market efficiency on the value relevance of accounting information. It would also be interesting to more deeply explore the consequences of various financing traditions within Europe, opposing countries where capital is provided mainly by the banking sector (Germany and France) to others which make a larger use of

stock markets (UK). Mixing country-specific factors with individual characteristics of firms would also permit to determine the influence of each type of variables on the attitude of companies with regard to capital markets.

Inasmuch as most European studies are based on British data, this survey confirms the dominance of UK over European accounting research. Our choice to restrict the review to studies published in English may partially explain this observation already suggested by Carmona *et al.* (1999). This language effect should not, however, be overestimated. There are, for example, only a few studies in the French accounting literature that could have been included in this survey. As far as it is possible to generalize from the French example, the inclusion of research published in other languages would probably not have substantially altered the UK dominance. More fundamentally, the preponderance of British studies may be a consequence of the Anglo-Saxon approach of accounting, which views investors as the primary users of financial statements. In continental Europe, the pre-eminence of investors over all users of accounting information is not as widely accepted as in the UK. This may explain that research on the relationship between accounting and financial markets is less developed in these countries. The overrepresentation of UK studies may also reflect differences in the way accounting research is viewed. While the positivist methodology is largely dominant in the Anglo-Saxon world, it is still contested in many countries of continental Europe where the normative or constructivist traditions are more popular.

A general limitation of European studies is that most of them have replicated research already conducted in the US, without questioning the applicability and relevance of the methodology and hypotheses in a different context. Accounting systems and financial markets are nevertheless the result of history and cultural traditions. Gray (1988) proposed several hypotheses relating the characteristics of accounting systems to cultural variables of countries but his work remained largely short-lived. A notable exception is Taylor Zarzeski (1996) who studied the influence of both cultural and market forces on the disclosure policy of companies from seven countries. Her results show that firms domiciled in cultures possessing more individualism, more masculinity and less uncertainty avoidance are more likely to disclose higher levels of information. Such research that takes into account the cultural dimensions of accounting and financial systems is highly desirable, especially when countries recently converted to a market economy are considered.

Generally speaking, Europe provides a unique and exciting field of investigation for accounting research, because of its economic, cultural and legal diversity. Significant contributions to the accounting literature could be made by multinational research teams that would systematically explore these differences.

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## NOTE

1 See Lev (1989) for a review of the US evidence.

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