The relationship between accounting information and security returns on the Irish Stock Exchange

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ABSTRACT

The relationship between accounting information and security returns in the Irish market is examined. The methodological approach adopted, while not commonly used in market-based accounting research studies, appears suited to the unique Irish setting. The foundation for the methodological approach utilized was first conceptualized by Granger (1969), who offered a definition of causality based upon the relations between time series. The results of the analyses suggest that for the Irish Stock Exchange: 1. the annual published accounting reports of quoted companies are a significant information source for market participants, 2. the information conveyed by accounting reports is not immediately impounded in security prices, 3. in accordance with a priori expectations, the financial statements of smaller firms appear to convey more information to the market than those of larger firms, and 4. the sector in which a company operates appears to influence the importance or otherwise of accounting data as an information source.

FULL TEXT

INTRODUCTION

Existing and potential shareholders in quoted public limited companies have access to many sources of information for their investment decisions. Published accounting reports are one such data source. For a variety of reasons, interested parties such as company management, stock exchange administrators, the regulatory bodies of the accountancy profession, security analysts and the academic community wish to ascertain the impact of financial statement information on the investment decisions of the equity investor group. Since the collective decisions of the latter group are reflected in security prices, international research in the area has focused on a study of the relationship between accounting information and security price movements. This type of work is a major element of a significant branch of academic accounting termed Market Based Accounting Research (MBAR). Although MBAR has become one of the most important and prestigious areas of academic accounting (Walker (1991)) published work in this area utilising Irish data (with the exception of O'Brien (1982)) is conspicuous by its absence. The present paper addresses this absence by presenting empirical evidence on the relationship in time between accounting information and security prices on the Irish market.

In the second section of this paper the conceptual issues involved in the study undertaken are examined with reference to important findings from related research in other capital markets. The following section outlines the issues involved in the definition of the variables used in the study and the database. The fourth section presents an explanation of the methodological approach utilised. The results generated and their implications are discussed and interpreted in the penultimate section, while the final section contains a summary of the article.

PREVIOUS LITERATURE

The seminal works on the reaction of the stock market to the publication of financial statements (Beaver (1968) in the U.S. and Firth (1981) in the U.K.) found a significant reaction to the publication of annual accounting data in terms of increased share dealing activity and abnormal security returns around the dates of the publication of accounting reports. However, a conclusion of these studies was that the market impounded the information contained in financial statements almost instantaneously. Subsequent evidence(e.g. Rendleman, Jones and Latane (1982), Foster, Olsen and Shevlin (1984) and Bernard and Thomas (1990)) postulated that this impounding process was not as rapid as earlier works had suggested. In addition, Ou and Penman (1989) derived a summary measure from financial statements that predicts future stock returns. This measure appears to capture equity values that are not reflected in stock prices although Holthausen and Larcker (1992) provide an alternative interpretation of the Ou and Penman result. All these results imply that the market takes a significant period of time to reflect the information contained in accounting statements. Further evidence for the existence of a lagged reaction is provided in studies of the utilisation of accounting reports by analysts in the U.K. (Arnold and Mozier (1984) and Day (1987)).

While the nature of the market's reaction to accounting reports is the subject of much discussion in academic circles, important work is also being carried out on a related issue i.e. the extent to which the market anticipates the information in corporate reports. The nature of the accruals and prudence concepts (SSAP2, ASC 1971) dictates that certain information will be impounded more rapidly in security prices than in accounting reports. For example, if a company found an oil well in the current accounting period, news of that find would probably cause an immediate and significant market reaction while the associated profits would not be reflected in financial statements until subsequent periods. Thus, in a very real sense, while the market reacts to accounting information, it can also anticipate at least some of the data in accounting reports. The pioneering work in this area was undertaken by Ball and Brown (1968) with a subsequent study by Beaver, Lambert and Morse (1980) supporting their original hypothesis that much of the information published in annual reports is anticipated by the market. Research undertaken by Collins, Kothari and Rayburn (1987) found that a large proportion of the variation in the percentage change in future earnings per share was explained by contemporaneous security returns. Also, from an alternative perspective, McNichols (1989) demonstrated that share prices in the U.S. appear to have information about a firm's future earnings even beyond that reflected in unbiased management forecasts. With regard to the situation in the U.K. O'Hanlon (1991) shows that security returns weakly lead accounting returns. These and related findings appear to support the hypothesis that security prices do have an information content vis a vis accounting information.

An important contribution to the MBAR literature is that of Kross and Schroeder (1989) who found that there was a greater market reaction to the earnings announcements of the smaller firms in their sample suggesting that accounting reports of smaller firms appear to convey more information to the market than those of larger firms. Since the latter type of firm tends to operates in a richer information environment the relative importance of financial statements as a provider of data relevant to security pricing decisions is reduced. Accordingly, the market's reaction to the publication of accounting reports for larger firms is not as significant as that for smaller companies. In a related vein, Collins et al (1987) found that a model using current price changes to forecast future earnings changes exhibits greater explanatory power for the largest firms in their sample rather than for the smallest firms. Such evidence implies that the information content of security prices is greater for larger than for smaller firms. In addition, work undertaken by Bublitz and Ettredge (1989) and Beaver et al (1989) suggests that the relationship between accounting information and security prices varies according to the industrial classification of a company.

In conclusion, from the necessarily brief review presented here it is evident that some of the key issues which underlie the international literature in the MBAR area are:

* the extent to which accounting reports are utilised as an information source for security pricing decisions
* the speed at which accounting information is impounded in security prices
* the impact of firm size on the accounting information/security returns relationship
* the impact of firm sector on the accounting information/security returns relationship

The concluding section of this paper analyses the empirical results generated in this study with regard to these issues in an Irish context.

DEFINITION OF VARIABLES AND DATABASE

DEFINITION OF VARIABLES

The empirical work undertaken necessitated a measure of share returns for a period and also a surrogate measure of the information content of accounting reports.

(a) Share Returns Of Company j For Accounting Period t (SR sub jt): were defined for each company as [(DIV + P sub 1 -P sub 0 /P sub 0] where:

* P sub 0 , P sub 1 , represent the share price of the company at the start and end of a particular accounting period;

* DIV represents the dividends paid and payable on each ordinary share of the company for the particular accounting period.

In effect, this measure comprises of the Capital Gain Plus Dividend on Security j for accounting period t. Appropriate adjustments were made for additional share issues, stock splits etc during the relevant accounting period. This definition of security returns is in accordance with that used in empirical financial markets research by Beaver et al (1980) in the U.S. and O'Hanlon (1991) in the U.K.(1).

(b) The Information Content Of Accounting Reports Of Company j For Accounting Period t (AI sub jt): is defined as the Profit After Taxation, Extraordinary Items, Preference Dividends and Minority Interest divided by the Ordinary Shareholders Funds for the period. Ordinary Shareholders Funds are computed as the half of the sum of Ordinary Share Capital and Reserves at the start and end of the period.

A surrogate for the information content of accounting reports is a difficult measure to define. Many of the studies reviewed in section two utilise the earnings figure as a representation of the published accounting information set. Nevertheless, Lev's (1989) comprehensive review of the empirical work in this area led him to conclude that the 'bottom line' figure is not a useful summary statistic of information content. Additionally, Whittington (1986) suggests that all the items in a set of financial statements become potentially informative in certain contexts. Thus, in order to capture information from both the Profit and Loss Account and Balance Sheet, an accounting return measure which relates the income generated to the shareholders funds employed by the business was considered appropriate. In addition, this type of measure of information content would be analogous in accounting terms to the share return already outlined. However, numerous definitions of accounting return are available in the literature. Research undertaken by Board and Day (1989) in the U.K. shows that the measure used in the present work does possess a significant information content and is judged superior in terms of incremental information content to two other conventional measures of accounting return which they tested. Thus, although the measure utilised here does not capture the entire spectrum of the information content of financial statements, it does encompass a significant portion of the data contained in financial reports.

DATABASE

The data set used comprised of the share returns and the surrogate measure for the information content of accounting reports (SR sub jt and AI sub jt) of 40 Irish Public Limited Companies whose shares were traded on the Irish Stock Exchange over the period chosen i.e. 1970-1989.

The other quoted companies operating on the Irish Stock Market were excluded from the study because their shares were not traded on the market over a significant portion of the 1970-1989 period. Thus, for the companies excluded, sufficient data was not available for the type of regression analysis carried out here. A small number of unavoidable gaps in the data set utilised exist due to difficulties associated with obtaining the relevant accounting information in the Irish setting.

METHODOLOGY

The foundation for the methodological approach utilised here was first conceptualised by Granger (1969) who offered a definition of causality based upon the relations between time series. In everyday language causality is synonymous with the notion of 'to force' or 'to produce' but the definition of causality offered by Granger is justified in terms of the predictability criterion. Recent research by O'Hanlon (1991) utilised 'Granger Causality' to assess the relationship in time between accounting and security returns in the U.K. stock market. The operation of Granger Causality in the present context is explained below.

Initially we use lagged values of share returns over previous accounting period in order to predict the share return for the current accounting period. Thus, the least square predictor of share returns for company j for accounting period t is hypothesised as:

(i) SR sub jt = a sub j (Constant) + b sub 1 SR sub j(t-1) + b sub 2 SR sub j(t-2) + e sub jt (Error Term)

This is termed the restricted regression. Subsequently, lagged values of the surrogate for the information content of accounting reports (termed the accounting information variable) are included in the model so that the least square predictor of security returns becomes:

(ii) SR sub jt = a sub 1 + b sub 1 SR sub j(t-1) + b sub 2 SR sub j(t-2) + b sub 3 AI sub j(t-1) + b sub 4 AI sub j(t-2) = e sub jt

This is termed the unrestricted regression. The null hypothesis is that the prediction of contemporaneous share returns using the unrestricted regression (regression (i) i.e. with the addition of the lagged accounting information variables) is not significantly more accurate than the prediction made using the restricted regression (regression(ii)). In more formal terms the null hypothesis states that lagged values of the accounting information variable in the unrestricted regression reflect none of that part of the variance of security returns that is not explained by lagged values of security returns. If the null hypothesis holds true then accounting information is said not to 'Granger Cause' security returns.(2)

For each company in the sample the null hypothesis is tested d by using the usual F-statistic to ascertain the effects of the additional explanatory variables in the unrestricted regression on the explained variable. For each F-statistic generated the area under the F-distribution to the left is determined. This region of the F-distribution indicates the probability values that the null hypothesis of no causality is false. For an assessment of the outcome at the aggregate of all the companies in the sample the mean of these probability values was computed and a frequency distribution prepared using 10 separate classes (class 1 has the range .000-.099). A chi-square test was then carried out in order to ascertain whether or not the distribution is uniform. Under the null hypothesis that accounting information does not Granger Cause security returns we would expect the distribution of the probability values to be uniform and have a mean value of 0.5. However, if the mean value of the probability values is greater than 0.5 and the distribution function is skewed to the right then this is evidence that accounting information Granger Causes security returns. The degree of causality may be ascertained from a study of the mean value and skewness of the distribution function.

The analysis outlined above was also carried out for each company using a single lag (i.e. by excluding the t-2 coefficients in each linear least square predictor) to investigate whether the choice of lag length has an impact on the results. Unfortunately, there is not sufficient data to carry out the regression analysis using any more than two lags.

To examine whether there were any significant differences in the relationship between accounting information and security returns of larger and smaller firms in the Irish market the sample was divided into two size groupings based on market value at a date which approximated as the midpoint of the sample period. A comparison of the results of the Granger Causality tests for the larger and smaller firm groupings should confirm the existence or non-existence of a size effect. The companies in the sample were also divided into six different groupings based on industrial classification to test whether the results of the Granger Causality analyses differed according to the sector in which a company operates.

RESULTS AND INTERPRETATION

Tables 1-3 present the summarised results of the empirical work undertaken. (Tables 1-3 omitted) These tables show the mean of the probability values for rejection of the null hypothesis that accounting information does not Granger Cause security returns for the overall sample and for the size and sector analyses. In cases where the mean of the probability values is greater than 0.5 and the chi-square test of the frequency distribution of the probability values rejects uniformity at the 5% level, we can reject the null hypothesis and state that accounting information Granger Causes security returns. Otherwise, we fail to reject the null hypothesis and conclude that no Granger Causality is evident.

In the literature review key issues relevant to the relationship between accounting information and security prices were highlighted. The aim here is to offer an insight into these issues from an Irish perspective. The importance of the empirical results generated to these matters in a domestic context is now examined.

(i) THE EXTENT TO WHICH ACCOUNTING REPORTS ARE UTILISED AS AN INFORMATION SOURCE FOR SECURITY PRICING DECISIONS

The results of the Granger Causality Tests for the whole sample are presented in Table 1.

For the two lag analysis we can reject the null hypothesis that accounting information does not Granger Cause security returns. The results of the one lag analysis confirm this conclusion. The finding that, overall, accounting information Granger Causes share returns suggests that the annual accounting reports of listed Irish companies influence investors' perception of the attributes which cause securities to be of value. Thus, it appears that market participants in the Irish Stock Exchange utilise accounting information when making investment decisions. Such a result is consistent with that of the international literature but contrasts with O'Brien's (1982) results for the Irish market. The disappointingly low levels of correlation between accounting and market based measures of risk in the latter study prompted O'Brien to conclude that the evidence did not support the hypothesis that accounting data reflect the underlying events which determine a security's risk and that such events are reflected in security prices. However, O'Brien qualified his conclusion by suggesting that his results may reflect imperfections in the capital markets rather than a lack of information content in accounting numbers. By adopting an alternative methodological approach to that utilised in the latter study, an important contribution of the present work is the finding that accounting reports of Irish companies convey useful information to the investment community. This result should please the accounting profession as it indicates that the end result of their work appears to be utilised by existing and potential equity shareholders and security analysts when making their investment decisions and recommendations respectively.

(ii) THE SPEED AT WHICH ACCOUNTING INFORMATION IS IMPOUNDED IN SECURITY PRICES

The results of the Granger Causality Tests At The Aggregate Level (table 1) show that accounting information from up to two periods (i.e. two lags) prior to the present accounting period appears to have an impact on security prices. One possible explanation for the existence of a lag is that the market needs time in order to determine which components of the accounting results published for the present period yield significant insights into the likely future economic performance of the reporting entity.

As discussed in section two of this paper, much of the current international research on the issue supports the conclusion that a significant time lag exists for the impounding of accounting information in security prices. An important implication of the existence of such a lag is that an in-depth expert analysis of published accounting reports could capture equity values that are not reflected in stock prices. Therefore, expert analysts would potentially be able to predict future stock returns from what is termed fundamental analysis of financial statements. However, the whole issue of whether fundamental analysis of Irish accounting reports can lead to excess returns requires further research along the lines of Ou and Penman (1989) and Holthausen and Larcker(1992).

(iii) THE IMPACT OF FIRM SIZE ON THE ACCOUNTING INFORMATION/SECURITY PRICES RELATIONSHIP

The results of the Granger Causality Tests For Size Effects are presented in table 2.

These results show that for the largest firms surveyed accounting information does not Granger Cause security returns. However, accounting information does appear to Granger Cause security returns for the smaller firms in the sample. Thus, accounting reports have a greater information content vis a vis security prices for smaller rather than larger firms. As mentioned in section two of this paper, the differential information content in accounting information and security returns dependent upon firm size has been well documented in the U.S. This phenomena has been attributed to the fact that a greater amount of analyst/media attention is devoted to larger firms. The relative dearth of external attention devoted to smaller firms results in parties interested in these companies having to rely to a greater extent on published accounting data as an information source for their decision making. No work has been carried out in the current study to ascertain whether there is a greater amount of analyst or media attention devoted to larger rather than smaller firms in Ireland. However, intuition suggests that this is in fact the case. Therefore, it is reasonable to conclude that the reasons for the results reported in table 2 are analogous to those for similar findings in the U.S. market. Earlier, it was stated that fundamental analysis of accounting reports in the Irish market could lead to abnormal security returns being achieved. Since accounting reports of smaller firms appear to convey more information to the market than those of larger firms it is likely that fundamental analysis of accounting reports could yield greater benefits in the case of smaller firms. Again, additional research needs to be carried out in order to test this hypothesis.

(iv) THE IMPACT OF FIRM SECTOR ON THE ACCOUNTING INFORMATION/SECURITY PRICES RELATIONSHIP

As stated in section 2 of this paper, studies in the U.S. indicate that the relationship between accounting information and security prices varies according to the sector in which a company operates. The results of the sector analysis undertaken in this study are presented in Table 3.

These results show that accounting information Granger Causes security returns in the Industrial and Banking sectors. While research in other capital markets has already documented inter-industry difference in the relationship between accounting information and security returns the focus of current work in the area is on establishing why this should be the case. Clearly, an investigation of the reasons for the differences in the accounting information/security returns relationship observed across different sectors of the economy as reported here is a potentially rich area for future research in the Irish market.

SUMMARY

This paper set out to examine the relationship between accounting information and security returns in the Irish market. The methodological approach adopted, while not commonly used in MBAR studies, appears suited to the unique Irish setting. The results of the analyses suggest that for the Irish Stock Exchange:

* The annual published accounting reports of quoted companies are a significant information source for market participants;
* The information conveyed by accounting reports is not immediately impounded in security prices. For that reason, an in-depth expert analysis of financial statements could reveal potential opportunities to earn abnormal security returns;
* In accordance with a priori expectations the financial statements of smaller firms appear to convey more information to the market than those of larger firms.
* The sector in which a company operates also appears to influence the importance or otherwise of accounting data as an information source.

In conclusion, it is hoped that this paper will stimulate interest in an area which has not been the subject of much research in recent years in an Irish context. Throughout section five, avenues for future investigation into the relevant issues are highlighted. However, those interested in undertaking work in this area should be fully aware of the problems involved in collecting the necessary data. Even in the U.K. market, Walker (1991) highlights a number of important data items which are not readily available. The situation with regard to Ireland is much worse than that in the U.K. since the majority of computer based equity information services only provide accounting information for some companies quoted on the Irish market from the mid 1980's onwards. However, if one is willing to devote the time necessary to obtain the relevant information from original source then the required database can be compiled.

NOTES

1. Much financial markets research utilises abnormal security returns and unexpected accounting returns in studies of this type. However, quite a number of important works have utilised actual rather than abnormal accounting and security returns. Readers interested in the theoretical justification for utilising actual returns are referred to the Beaver et al (1980) work. Given the problems associated with adjusting the betas of the many thinly traded stock in the Irish market (McKillop and Hutchinson (1988)) utilisation of actual rather than abnormal returns is likely to lead to more insightful results in the Irish setting.

2. The regression equations used to predict security returns use only accounting information and previous security returns. No other variable is included to incorporate other factors which may influence security returns such as changes in interest rates, etc. The reason for this is that the study aims to isolate the impact of accounting information from those other factors which affect security returns

3. At the level of the sectoral analysis accounting information appears not to Granger Cause security returns for four industries which comprise 25 out of the 40 companies surveyed. Yet, for the overall sample, accounting information appears to Granger Cause security returns. This apparent anomaly occurs because when grouping the sample into sectors, those companies for which significance is not evident tend to dominate the overall sectoral result. Thus, for many of those sectors for which accounting information is reported as not Granger Causing security returns, individual companies within that sector do exhibit significant evidence of causality.

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DETAILS

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