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IRISH EVENT STUDIES: EARNINGS ANNOUNCEMENTS, TURN OF THE YEAR AND SIZE EFFECTS

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Introduction

Following the seminal study of stock splits by Fama, Fisher, Jensen and Roll (196) event studies have become an important part of finance. The growth of this research has centred on major international stock markets, with the smaller stock exchanges receiving scant attention. This is especially the case in respect of the Irish equity market.

This paper takes a dynamic approach to traditional event study methodology and provides an event analysis of twenty two companies listed on the Irish Stock Exchange. Two events are assessed: earnings announcements and the 'turn-of-the-year' effect. Literature in these areas suggests that equity size, measured by the market capitalisation, plays an important role in detecting the existence of an event. The paper also considers the impact of company size in each event.

Of the many event studies, the 'turn-of-the-year' effect is consistently classified as an 'anomaly.' This effect refers to the phenomenon that equities with low capitalisation have unusually high returns during the period beginning on the last trading day of December and continuing through January. The effect is most pronounced for 5 days; the last trading day of December and the first 4 trading days of January, becoming progressively less pronounced in the succeeding days in January (Roll, 1983).

Irish evidence on the 'turn-of-the-year' effect is mixed. Donnelly (1991) observes abnormal returns for the month of January which he explains by the tax-loss-selling hypothesis. McKillop and Hutchinson (1988), however, found no such effect although they did detect a 'small firm' effect. These two studies in using monthly data do not focus specifically on the turn of year period. The current paper does, based on Roll's (1983) definition of the turn-of-the-year.

Recent international evidence on the informational content of earnings announcements is mixed, for example Lev (1989), Ball and Kothari (1991), Impson and Karafiath (1992) and Strong and Walker (1993). Given the volume of research in this area, it is somewhat surprising to observe the lack of any reported Irish evidence. This paper addresses this deficiency.

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The paper begins with a review of the literature on event studies, and the data is then described; this is followed by an outline of the theory and a discussion of the appropriate statistical methods of testing for abnormal returns and volatility. A recursive-sample methodology which accounts for information flows and allows beta to vary is employed. The empirical results are then presented, from which are drawn conclusions with implications for Irish market efficiency.

Event Studies

A Review of Past Studies

Event studies have proven over the past three decades to be one of the most fertile research fields.[2] Their implications for the presence or absence of market efficiency adding to their interest. The relative speed of price response which is the central issue of market efficiency can be precisely measured by daily data. Furthermore, the joint hypothesis problem, that market efficiency must be tested jointly with an asset pricing model, is eliminated or at least attenuated when using daily data (Fama, 1991).

International event studies report that, in general, stock prices respond quickly, within a day of an event announcement. This is a strong defence of stock market efficiency. However, for a number of events, for example 'turn-of-the-year' and earnings announcements, stock prices do not respond quickly to the event information, that is the pricing model's residual $e_{i,t}$ deviates from zero for long periods of time.[3]

Rozeff and Kinney (1976) first documented a 'seasonal event' effect showing that stock returns are higher in January than in other months. Subsequent research has shown that this straddles the year with the strongest effects occurring over the last trading day in December and the first four trading days in January (Roll, 1983). Moreover, the prices of small capitalisation stocks increase significantly relative to large capitalisation stocks in January (Banz, 1981; Keim, 1983; Roll, 1983; and Blume and Stambaugh, 1983).

Although the January and 'turn-of-the-year' effects are well documented, explanations of why they occur are varied. Five hypotheses have been put forward; relating to: (i) tax-loss-selling (Roll, 1983; and Reinganum, 1983), (ii) seasonality of the risk return relationship (Tinic and West, 1984), (iii) inside-trading/ information-release (Seyhun, 1988), (iv) the parking-the-proceeds hypothesis (Ritter, 1988) and (v) omitted-risk factors (Banz, 1981; and Chan and Chen, 1991). Donnelly (1991) reports that a possible reason for the evidence of a January effect for the Irish stock market is the tax-loss-selling hypothesis. However, the parking-the-proceeds hypothesis put forward by Ritter (1988) has equal merit when applied to the Irish stock market.

The earnings announcement literature is also varied. Lev (1989) concludes that the usefulness of earnings announcements tends to be embarrassingly low. Strong and Walker (1993), however provide evidence that earnings are a significant explanatory variable for stock returns. As there is no documented research on earnings announcements

for Irish equities, only international evidence can be drawn upon.

Recent studies show that return variances, and therefore expected returns, increase during earnings announcements, for example, Ball and Kothari (1991). They report however that abnormal returns remain even after controlling for risk increases. Furthermore, a 'small firm' effect exists for the earnings announcement events (Bernard and Thomas, 1990), with positive abnormal returns, after controlling for risk, decreasing as firm size increases (Ball and Kothari, 1991).

Traditional Event Study Methodology

There is considerable criticism of the traditional event study methodology - see for example, Ball and Kothari (1991), Boehmer et al (1991) and Nimalendran (1994). These studies question the robustness of parameters obtained from the return generating model in terms of its underlying conceptual and statistical assumptions. Certain deficiencies seriously undermine the reliability of model estimators. These include the incorrect specification of event dates, risk changes around event time being unaccounted for, and the incorrect modelling of the diffusion of information.

Static models fail to identify significant abnormal returns for equities as they do not properly account for event-induced risk. An event prompts increases in variance of returns due to increases in individual firms' systematic risk. The increase in risk during event periods is measured as up to 3 times that of non- event periods (Brown and Warner, 1985). This leads to a common rejection of the null hypothesis of zero abnormal returns, when they do in fact exist.

The return generating model also encounters the problem of distinguishing true abnormal returns from increased expected returns. Increased variance of returns results in increased expected returns. Changes in abnormal returns do not necessarily occur in this situation; and Ball and Kothari (1991) discuss the problem of previous studies not modelling risk correctly. Influences of risk on event time returns are taken account of by allowing the estimating coefficients to vary over time. In this case, abnormal returns recorded for event periods are not a result of event-induced risk.

A static return generating model provides average estimates of parameters. These estimates are only for certain times over a sample period. Incorrect estimates are obtained for other times as the model is incapable of focussing around the full time series. This may lead to incorrect and contradictory results being recorded for time-related event studies. Thus inaccuracy of parameters may explain the mixed international and Irish findings for the earnings announcements and 'turn-of-the-year' events - for example if a sample 1970 to 1990 is chosen and a time-related effect is present for 1970-1985, but for the last 5 years there is a 'negative' effect. The conclusion of the existence of a timing anomaly being present depends on the relative magnitude of the positive and negative effects. This inaccurate examination of past data leads to imprecise conclusions about time-related events.

Recursive Least Squares

This study uses the Recursive Least Squares (RLS) technique to obtain parameter coefficients of the estimating model. This method is dynamic in nature and allows parameters to vary over time. The concept behind RLS is that the diffusion of information affects estimates on an aggregate basis. Estimates are obtained on the basis of past information only. RLS does not allow future data (unlike a static regression) to affect the information processes. The approach adopted here overcomes the criticisms of the traditional event study methodology. We obtain accurate estimates of the return generating equation over the full time period analysed by allowing parameters to vary over time. It is then possible to discover whether time-related events occur just on average, or over the full period of analysis. The mixed results for time-related event studies are explained. RLS also allows the estimating parameter to vary over time and this overcomes the problem of incorrectly specifying the underlying return generating process. By accounting for event-induced risk, a distinction is made between abnormal returns and increases in expected returns. The methodology generates robust results after allowing risk to vary over time. Recursive methodology simplifies too the analysis of dynamic models such as asset pricing, without making strong functional form assumptions (Stokey et al, 1989).

The time varying parameters take account of risk changes. The recursive model can correctly identify significant abnormal returns for equities. Hypothesis testing accurately checks for the existence of events. A related issue is the question of robustness as regards the test statistics applied in event studies. Boehmer et al (1991) examine several test statistics and find that event-induced variance is a detrimental influence. In general, the traditional t-statistic rejected the null hypothesis of zero abnormal returns too frequently. The traditional test has been used in this study, but the event-induced risk is accounted for by adopting the recursive approach. Moreover, a second test statistic was applied for comparative purposes so as to ensure robust results - the non-parametric Wilcoxon Matched Pairs, Signed Rank test statistic. This has the advantage of recognising the asymmetry in equity returns which are skewed to the right.

Data Description

The Irish Stock Exchange is small by international standards. In 1995 the top ten companies accounted for over 75 percent of the total market capitalisation. In terms of listings, a large number of the equities are on the Unlisted Securities Market (USM) and the Small Commodities Market (SCM). The sample was drawn from the population of companies with a full listing since 31 March 1989. Excluding companies which do not have a consecutive annual series of earnings announcements results in a sample size of 22. A brief description of these companies in terms of size and earnings announcement dates is presented in Table 1.

Table 1: Restricted Sample of Companies

Company	*Market Size (IR£M) December, 1995*	*Earnings Announcement Date, 1995*
Allied Irish Bank	2280.7	February 14
Bank of Ireland	2167.4	May 11
CRH	1678.9	March 7
Jefferson Smurfit	1599.4	April 19
Waterford Wedgewood	431.4	March 21
Woodchester	354.4	March 8
Aran	191	March 27
Clondalkin	149.8	February 21
Fitzwilliam	123.7	March 27
Lyons	102	June 9
Green	77.8	February 23
New Ireland	65.2	April 11
Inishtech	62.6	March 8
Arnotts	57.7	March 30
Unidare	55.3	January 17
Flogas	54.6	May 4
Abbey	53.1	August 1
Readymix	37.8	March 3
Silvermines	37.8	March 30
Heiton Holdings	33.4	July 13
IFG	8.4	April 19
McInerney	2.3	June 30

Sources: (1) Datastream and Extel.

The annual earnings announcement dates tended to remain relatively unchanged with announcements being released, in general in the first half of the year. Daily price data are taken from Extel and Datastream (closing reading) over the period 31 March 1989 to 31 March 1996. The market proxy is the Irish Stock Exchange (ISEQ) index. Returns are calculated by the first differences of the natural logarithm of prices. The influence of firm size on the time-related events is tested by comparing abnormal returns for large and small sized companies. We used an arbitrary rule in deciding which companies were classified as small and large. In testing the small firm hypothesis, small firms were defined as companies with a market capitalisation of less than £50 million at December 1995, whereas large companies were taken to have a capitalisation value in excess of £350m.

Methodology

The most common event study methodology applies the Market Model to calculate abnormal returns. This is followed in the present study with two additional indicators of performance around an event: an equity's rate of return, and its corresponding standard deviation. These risk and return measures are used to test several hypotheses about the 'turn-of-the-year' and the 'earnings announcement' events. In estimating abnormal returns the market model is expressed recursively as:

$$R_{i,t} = \alpha_i + \beta_i (R_{m,t}) + e_{i,t} \qquad [1]$$

Equities priced by the market model have an expected zero residual. Abnormal returns occur for an equity if non-zero residuals persistently exist for the event window. The recursive least squares estimates of α_i and β_i, are used to calculate the abnormal returns, $AR_{i,t}$:

$$AR_{i,t} = (R_{i,t}) - [\alpha_{i,t} + \beta_{i,t}(R_{m,t})] \qquad [2]$$

The recursive-sample methodology is used to account for information flows without making additional strong functional form assumptions. This research design allows risk to vary daily in event time. We estimate equation [2] for each trading day t. Cumulating the AR over a certain period yields the Cumulative Abnormal Return (CAR), where:

$$CAR_{i,t} = \sum_{t=1}^{T} AR_{i,t} \qquad [3]$$

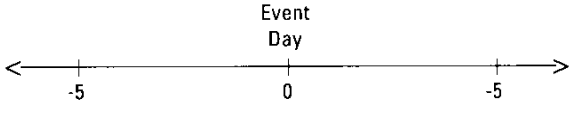
with T = number of trading days in a window.

The existence of an event is investigated by analysing the abnormal return on the date of a public information announcement. However, if there is a leakage of information (for example 'private' information) equity prices may change before this date and, depending on speed of price adjustment, after the occurrence of an event. This results in an event influencing equity prices over a period of time, rather than on one specific day. For this reason, an eleven- trading day window centred around the earnings announcement date is chosen, and for the 'turn of year' effect a fifteen-trading day window is chosen.[4] The different measures over the event window period are tested against the 'norm' - that is, against the non-event time period by estimating daily moving averages of the measures for the same window size, six months before and after the event, as shown in Figure 1:

Figure 1

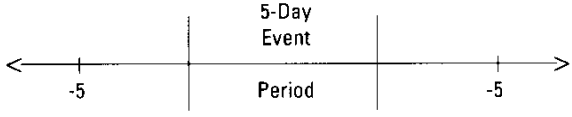
The earnings announcements event eleven-trading day window is presented in Figure 2:

Figure 2



and the turn of year event fifteen-trading day window is shown in figure 3:

Figure 3



The null hypothesis is tested that the event period is insignificantly different from the non-event period. For instance, the following null hypothesis is tested for the CAR measure:

$$H_o : \overline{CAR}_{Non\text{-}Event} = CAR_{Event}$$

against the alternative:

$$H_a : \overline{CAR}_{Non\text{-}Event} \neq CAR_{Event}$$

The parametric test statistic is the traditional method as outlined by Boehmer et al (1991). The traditional method is adjusted for use with single equities and is given as:

$$t = \frac{CAR_{Event} - \overline{CAR}_{Non\text{-}Event}}{\delta_{CAR}/\sqrt{n}}$$

and assumes that the parent population is normally distributed, where δ_{CAR} is the standard deviation of the estimated CAR distribution and n represents the number of non-event CARs during a year. The CAR distribution is obtained from a daily moving average of the event-window period CAR. Similar t- statistics are calculated for the other measures: equity returns and standard deviation of returns.

The non-parametric Wilcoxon Matched Pairs, Signed Rank test is used to examine various hypotheses regarding the measures obtained for the different time periods. The first set of hypotheses investigate whether the event period is insignificantly different from the non-event period. The hypotheses also test whether the CARs are both more positive and negative in the event period vis-à- vis the non-event period. The Wilcoxon test operates on the assumption that there is no maximum or minimum limit placed on the difference between the matched pairs. It also takes account of the size of the differences between pairs of data and hence is considered better than ordinary rank sum analysis, which indicates only the direction of these differences. The test statistic is:

$$Z = \frac{m'(m' + 1)/4 - R^-}{\sqrt{[m'(m'+1)2m'+1)/24]}}$$

where m' equals the number of matched pairs after deleting tied pairs and R^- equals the sum of the negative differences between the matched pairs.

Empirical Results

The Market Model is estimated (as equation [1]) recursively for each trading day over the period March 31, 1989 to March 31, 1996. The recursive-sample is taken as January 1, 1990 through to December 31, 1995. The three risk and return measures are used to test several hypotheses concerning the effect on daily equity prices of the earnings announcements and turn of year events.[5] Results are presented for equal weighted portfolios compiled from the equities analysed using the market model. The Appendix gives results for the individual equities.

Earnings Announcements Findings

Several international studies have shown that return variances and therefore expected returns, increase during earnings announcements (Ball and Kothari, 1991).[6] This study's findings accept this hypothesis for Irish equities.

Abnormal returns remain after controlling for information flows and allowing beta to vary. Table 2 reports the parametric and non-parametric test statistics for the risk and return measures for an equally weighted portfolio of Irish equities.

Table 2: Tests of Earnings Announcement Event

t-statistic	*Return*	*Risk*	*CAR*
1990	-1.254	4.346+	-0.985
1991	15.064+	1.136	6.778+
1992	2.473+	0.415	2.017+
1993	8.934+	2.620+	1.970+
1994	4.130+	2.716+	1.075
1995	14.210+	0.620	3.642+

z-statistic		*Return*	*Risk*	*CAR*
1990-1995	Event periods	1.992+	2.121+	2.742+
1990-1995	Positive CARs	-	-	5.659+
1990-1995	Negative CARs	-	-	5.446+

Notes: The symbol + indicates significant at the 5% level.

The t-statistic examines the hypothesis that the event time measure equals the non-event time measure. The z-statistic also measures this hypothesis as well as determining the timing of positive and negative CAR values. The portfolio returns around the earnings announcement event deviate significantly from the average returns for the non-event period. 5 of the 6 years report a significant positive change in portfolio returns. Moreover, for most equities, the returns during the event time accounts for a substantial proportion of their annual returns. Therefore, when earnings announcement news provide investors with new information there is a large significant change in portfolio returns. The findings support the hypothesis that the event time returns are a result of changes in diversifiable risk as standard deviation tend to increase during event time.

All the event-time CAR measures differ from zero. However, a stronger test for the existence of an event is whether the CAR for the event is significantly different from the average eleven-day CAR in the non-event time. The parametric and non-parametric statistics are generally significant and these results tend to be mirrored by the individual securities as can be seen in the Appendix. The event time results in a significant positive change in abnormal returns, indicating the existence of the earnings announcement event. The significant z- statistics which examine whether the event period CARs are both more positive and negative than the corresponding non-event periods reinforce the findings of an earnings announcement event.

The positive t-statistics indicate that 'good' news outweighs 'bad' news.[7] This could indicate that investors are not overly pessimistic about the earnings news. But a more likely indication is a result of companies announcement policy. Companies generally release more good news than bad news via earnings announcements, a policy particularly adopted by small firms. This evidence further supports the hypothesis that earnings announcements provide investors with new information that results in a

considerable change in the equity's price.

The standard deviation of portfolio returns are significantly different during the event time than the non-event time. The findings of this study support international evidence that the standard deviation increases during the earnings announcement period. The test statistics concerning the standard deviation of returns are consistently positive in Table 2.

Overall the evidence is that, around earnings announcements, there is a significant change in equity returns. This can only be assigned to new information. The earnings announcement information appears to have a greater impact on return when goods news is announced. There is also a clear pattern to suggest that the earning announcement periods are significantly more risky than the non-announcement periods. Abnormal returns remain after the increase in risk levels.

Turn-of-the-year Findings

The 'turn-of-the-year' hypothesis purports that stock returns are higher, on average, over the last trading day in December and the first four trading days in January than the rest of year. International support for this hypothesis is very strong (Roll, 1983). Irish studies have concentrated on a monthly effect, and the evidence on this is very much mixed. Donnelly (1991) supports a positive effect for January whereas McKillop and Hutchinson (1988) report an insignificant January effect.

The findings here support the existence of a 'turn-of-the-year' event (as defined by Roll) for certain years. However, on average we do not find significantly higher returns. For 1992 and 1993 a 'turn-of-the-year' effect is evident, but this tends to be cancelled out by other years. Portfolio returns for the years that an anomaly exist tend to be more pronounced (i.e., higher absolute value) than for the years when 'turn-of-the-year' results in a lower return. This leads to the acceptance of a 'turn-of-the-year' effect over a longer time horizon.

The most common explanation of why equities exhibit higher returns at the turn-of-the-year than other times during the year is the tax-loss-selling hypothesis (Roll, 1983). This hypothesis explains that there is downward pressure on prices which have already declined during the year. This enables investors to realise capital loses. Once the year end occurs investors start to bid up prices which generate large positive returns. However, if investors realised that such a pattern existed persistently, they would bid up prices before the end of the year and thus there would be no significant positive returns during this period. For this reason we extended the 'turn-of-the-year' effect to include five days before and after the event.

Table 3 reports the relevant parametric and non-parametric test statistics testing the null hypothesis as to whether the risk and return measures are significantly different in the 'turn-of-the-year' event time period than the non-event period.

Table 3: Tests of Turn-of-the-year Event

t-statistic	*Return*	*Risk*	*CAR*	
1990	0.005	-3.320+	-5.416+	
1991	0.205	3.839+	-14.730+	
1992	1.980+	4.383+	96.532+	
1993	3.253+	4.239+	140.170+	
1994	-0.021	-1.644	-41.290+	
1995	0.324	0.958	-3.793+	
z-statistic		*Return*	*Risk*	*CAR*
1990-1995	Event periods	0.357	0.201	0.883
1990-1995	Positive CARs	-	-	4.900+
1990-1995	Negative CARs	-	-	4.417+

Notes: The symbol + indicates significant at the 5% level.

All the portfolio CARs reported are significant at the 5 percent level. Although the negative CAR t-statistics occur twice as often as the positive ones, the positive values are more pronounced than the negative values. The t-statistics report a higher absolute value for event-time CARs that have increased over the turn of year than those that have decreased. The CAR z-statistic is insignificant indicating similar levels of positive and negative returns. The event period also results in significant positive and negative z CAR values. In the Appendix just over half of the significant CARs are higher in event time than the average non-event time values. Not one equity exhibited a persistent positive 'turn-of-the-year' effect. Hence the 'turn-of-the-year' results in a positive effect on average only.

A similar finding is reported when portfolio returns are examined. Higher event-time returns outweigh lower event-time returns. For example, the portfolio's event-time return is significantly higher for 1992 and 1993 but not so for other years. The t-statistics for the other years are insignificant indicating that the turn of year occurs on average only. This average turn of year finding is reinforced by the significant (2.657) z-statistic for equity returns during event time as compared to non-event time. Generally, equities that exhibit higher CARs also exhibit higher returns in event-time. This is borne out by the finding that years which exhibit significant return t-statistics have significant CAR t.

The event time standard deviations of returns are significantly different than the non-event time for the years when the portfolio exhibits positive returns. There is an increase in risk during 1992 and 1993 suggesting that increased returns is linked with increased unsystematic risk.

Overall the evidence is that there is a significant change in portfolio returns around the start of the calendar year. A 'turn-of-the-year' effect does not occur

persistently, but on average. The 'turn-of-the-year' effect generally coincides with increased unsystematic risk. The findings tentatively support Donnelly (1991) and could also explain the different findings by McKillop and Hutchinson (1988). It is likely that similar results would also be found for other stock markets if the 'turn-of-the-year' hypothesis is tested for on a yearly basis.

Size-related Effects

The strongest evidence of anomalies in equity markets is time events that have size related effects.[8] We now examine whether the two timing anomalies can be explained in terms of different size portfolios. The procedure used is to create value weighted portfolios according to the size classifications. These portfolios generate risk and return measures after applying the event study methodology.

Table 4: Test of Size Related Effects: The Earnings Announcement Event

		Return	*Risk*	*CAR*
1990	Large	0.459	-4.063+	11.161+
	Small	0.498	-2.747+	1.965
1991	Large	-0.005	-1.924	2.518+
	Small	0.179	-0.243	10.064+
1992	Large	-0.371	-32.779+	6.617+
	Small	-0.498	4.793+	-1.207
1993	Large	1.631	-0.614	12.374+
	Small	1.164	-1.565	2.764+
1994	Large	-0.710	-3.077+	-5.387+
	Small	0.883	5.086+	2.981+
1995	Large	-0.093	-2.468+	-5.520+
	Small	2.417+	-1.735	8.864+

Notes: Small companies have a market capitalisation value of less than £50 million.
Large companies have a market value of greater than £350 million.
The symbol + indicates significant at the 5% level.

Table 4 reports the earnings announcement t-statistics for large and small sized portfolios. The evidence does not support the hypothesis that small firms earn greater abnormal returns than large firms. Both sized firms tend to earn positive CARs. For the small equities, cumulative abnormal returns during the announcement periods are significant 3 years out of the sample period compared to 4 years for large equities. Also the value of the positive CAR t-statistics for small equities are outweighed by those of larger equities. These findings contradict international evidence of small firms outperforming large firms.

It would be expected (Ball and Kothari, 1991) that small firms exhibit higher

returns and risk during the event period. This is not the case for Irish equities. Portfolio returns of small firms are insignificant (with the exception of 1995). Their risk levels only increase two years over the sample period. There is no consistent link between small firms returns and risk. For the portfolio of large firms return levels change insignificantly during the event period. In addition, large firm risk levels decrease during the full sample period.

This study supports the hypothesis that small firms earn larger returns during the 'turn-of-the-year' period than large firms. Table 5 reports the 'turn-of-the-year' event t-statistics for small and large equities.

Table 5: Test of Size Related Effects: The Turn-of-the-year Event

		Return	*Risk*	*CAR*
1990	Large	-0.756	-1.353	-16.292+
	Small	-0.636	3.389+	-1.511
1991	Large	0.565	-1.928	-2.647+
	Small	-1.158	16.658+	-5.884+
1992	Large	0.758	4.495+	26.194+
	Small	2.874+	16.312+	7.572+
1993	Large	0.853	-2.708+	-5.727+
	Small	2.578+	11.743+	8.338+
1994	Large	0.063	-3.203+	-3.241+
	Small	0.353	11.102+	1.637
1995	Large	0.383	-3.228+	-1.602
	Small	1.046	11.715+	4.558+

Notes: See Table 4.

The clearest evidence of the 'turn-of-the-year' effect is usually seen by return measures. The average daily event time returns of small sized equities for the 'turn-of-the-year' is positive. The return t-statistics of small firms are positive and outweigh large firms. The turn of year effect is not present for large sized equities, as none of the return t-statistics are significant. The CAR measure supports the 'turn-of-the-year' effect being present for small equities. The CAR t-statistics for small firms are greater than for large firms.

The standard deviation of returns decreased for large sized equities during event-time, whereas it increased for small firms. The large sized equities' standard deviation increased significantly only one year from the sample period as compared to all years for small sized equities. These risk and return measures support international evidence of a 'turn-of-the-year' effect. A 'turn-of-the-year' effect is present for small sized equities. The main hypothesis to explain the 'turn-of-the-year' effect is the tax-loss-selling-hypothesis (Roll, 1983).

Summary and Conclusions

This paper set out to determine whether two specific timing events affected equities on the Irish stock exchange. These events are the earnings announcement and the 'turn-of-the-year' effects. Also examined is the size effect. Research for international markets suggest that these events occur as anomalies.

A recursive approach is employed to calculate risk and return measures. Future data does not bias the information process with this approach. The approach highlights problems of past event studies. The findings of event studies, centred around abnormal return measures are obtained by regressing a static CAPM over a specific sample period (typically more than 15 years). However, these studies report an average estimate of the sample period. These studies do not provide an accurate description of past behaviour and will mislead investors to predict future behaviour.

Several international studies have shown that equity returns increase during earnings announcement (Ball and Kothari, 1991). The findings of the study accept this hypothesis for Irish equities. We report that cumulative abnormal returns deviate significantly from zero and from the non-event-time CARs, after controlling for information flows and allowing beta to vary. Moreover, positive CARs remain after risk changes. The evidence reveals that abnormal returns generally are positive and unaffected by firm size.

The findings of significant CARs and returns for the event time could indicate that the Irish stock market is inefficient.[9] Other reasons include: risk changes not captured by the research design; tax effects (including capital gains taxes); inadequacy of the market model or the index of security returns; and trading- mechanism bias due to trading behaviour around earnings announcements. This is far from a complete explanation of the earnings announcement phenomenon. A common explanation of positive CARs during earnings announcement periods is that, by chance, the sample period could include stocks releasing more good news than bad news via earnings announcements. The findings support this view.

The reported evidence tentatively support international findings of a 'turn-of-the-year' effect where firm size influences the outcome. The evidence reveals CARs deviate significantly from zero and from non-event-time CARs. *On average* the CARs are positive. The findings indicate that the turn of year effect should not be directly accepted for equities on the Irish stock market. It is clear that over a large (more than 10 years) sample period, returns are higher during the turn of year than at other times. This conclusion cannot be accepted for smaller sample periods and for individual stocks. This points caution for investors interpreting other studies. Further research is required to test whether the tax-loss-selling hypothesis is relevant for the Irish stock market. This may further explain our turn of year effects findings. This paper provides a starting point for such new research on Irish event studies.

Notes

1. The use of the word 'anomaly' refers to an event that consistently and systematically occurs for some (or all) asset(s).
2. Event study review literature is extensive. Among the most comprehensive are Jensen and Warner (1988), Lev (1989), and Santomero (1991).
3. As a recognition of the expanding event study literature, the *Journal of Economic Literature* classifies G14 as "Information and Market Efficiency; Event Studies".
4. An 11-trading day period was analysed for each earnings announcement; the day of the disclosure and 5 days before and after that date. To investigate equity returns around the 'turn-of-the-year' a 15 day window was opened, 5 trading days before and after the period as defined by Roll (1983).
5. The Market Model generated similar results using the FTSE100 index as a market proxy. Only results using the ISEQ index are shown.
6. Ball and Kothari find that increased (diversifiable) risk can at least in part explain the higher (lower) return around earnings announcements.
7. 'Good' news is defined as causing higher abnormal returns and 'bad' news lower abnormal returns.
8. Most noticeably, the 'turn-of-the-year' effect.(Banz, 1981; Keim, 1983; Roll, 1983; Blume and Staumbaugh, 1983; and Ritter, 1988).
9. If stock prices adjust quickly to specific information, then event studies are the cleanest evidence of efficiency (Fama, 1991).

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Appendix: Test of Earnings Announcement Event: CAR t-statistics

	1990	*1991*	*1992*	*1993*	*1994*	*1995*
Allied Irish Bank	-16.952+	23.846+	-1.867	7.337+	-16.9324+	-7.8328+
Bank of Ireland	23.257+	0.729	21.291+	20.849+	-13.443+	-1.004
Woodchester	2.944+	27.121+	-11.221+	40.086+	7.255+	43.172+
Jefferson Smurfit	-3.2889+	5.051+	-14.519+	-22.754+	6.985+	-2.738+
CRH	-0.783	-15.819+	-0.854	-19.177+	44.525+	22.060+
Clondalkin	8.405+	25.253+	19.063+	19.062+	-0.013	24.443+
Silvermines	8.495+	0.606	-35.843+	-1.867	18.046+	19.440+
Heiton Holdings	0.677	-12.655+	20.576+	6.642+	-30.935+	2.968+
Abbey	-40.734+	35.761+	19.973+	4.433+	42.461+	-35.966+
Arnotts	0.551	-22.773+	-25.600+	21.693+	-2.115+	-19.350+
Fitzwilliam	-18.066+	8.492+	-29.462+	-8.188+	-30.299+	71.004+
Flogas	-1.633	12.530+	0.837	3.556+	-7.657+	-2.163+
Inishtech	-5.123+	0.809	-8.752+	-6.680+	-6.126+	3.299+
Readymix	-0.511	7.596+	28.288+	15.015+	-8.817+	58.301+
Lyons	19.870+	-5.848+	9.189+	-5.559+	15.827+	33.734+
McInerney	-1.394	-2.951+	3.032+	-3.068+	5.646+	-0.339
IFG	3.073+	29.609+	1.786	-8.025+	9.148+	21.828+
Green	7.742+	6.334+	-3.141+	20.581+	-10.271+	10.977+
Aran	-5.612+	-11.231+	-5.625+	0.621	13.970+	-2.516+
Waterford	5.995+	11.488+	25.780+	-16.648+	25.634+	6.920+
Unidare	-31.582+	26.285+	29.582+	6.047+	1.695	-38.913+
New Ireland	1.026	-6.215+	4.259+	4.107+	-15.835+	37.527+

Notes: The symbol + indicates significant at the 5% level.

Appendix: Test of Turn of the Year Event: CAR t-statistics

	1990	*1991*	*1992*	*1993*	*1994*	*1995*
Allied Irish Bank	7.182+	4.004+	9.715+	-33.904+	-4.441+	7.543+
Bank of Ireland	7.485+	-0.893	-9.360+	13.727+	1.643	-27.367+
Woodchester	-15.755+	-15.124+	13.661+	3.553+	4.788+	-70.696+
Jefferson Smurfit	3.042+	8.009+	-7.143+	-15.749+	7.779+	8.207+
CRH	-12.994+	16.273+	15.059+	19.107+	-10.709+	-50.631+
Clondalkin	-21.040+	12.795+	5.798+	20.134+	9.968+	-1.351
Silvermines	-0.726	-31.896+	19.214+	7.211+	-14.016+	22.558+
Heiton Holdings	10.071+	-13.826+	26.530+	12.344+	16.806+	15.581+
Abbey	9.773+	25.504+	36.134+	21.224+	-3.644+	-10.676+
Arnotts	-0.689	-10.068+	50.504+	14.228+	2.099+	-27.000+
Fitzwilliam	2.975+	-9.585+	17.338+	22.158+	-0.101	4.743+
Flogas	-9.620+	-0.447	29.377+	3.431+	-6.304+	17.961+
Inishtech	-22.089+	4.921+	-13.371+	36.640+	3.851+	17.362+
Readymix	-1.881	3.989+	-7.216+	8.316+	0.651	-22.444+
Lyons	12.772+	66.012+	138.025+	26.510+	-34.319+	-10.918+
McInerney	65.998+	-15.307+	85.204+	25.492+	-11.861+	-12.369+
IFG	-55.199+	-10.956+	107.935+	-20.661+	100.544+	-19.234+
Green	-4.555+	46.819+	109.188+	7.822+	-94.197+	22.719+
Aran	25.725+	2.687+	-7.623+	-2.232+	-5.474+	-8.301+
Waterford	3.762+	-7.099+	11.540+	-8.617+	-8.705+	-7.591+
Unidare	-25.782+	-6.227+	36.431+	11.595+	2.883+	7.265+
New Ireland	0.953	-4.893+	2.325+	2.494+	3.841+	-12.499+

Notes: The symbol + indicates significant at the 5% level.