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Abstract

The preholiday behaviour of equity price and return indices on the Irish Stock Exchange do nor display consistent positive pre-holiday returns. This is contrary to the majority of studies on this area, and the result is found across a number of sectoral indices. The analysis also indicates that these curious results are driven by local, as opposed to international, influences

Introduction

The Holiday, or more correctly, the pre-holiday effect, refers to the observed fact that share returns typically exhibit consistent patterns around holidays, with high and consistent returns on days prior to major holidays. Initially examined in the context of the US, there is a body of evidence that the holiday effect, like the January and weekend effects, is international. This precludes the possibility of it reflecting the idiosyncratic market characteristics of any one exchange.One striking characteristic of the literature is that exposition rather than explanation dominates it. While there exist well-grounded testable theoretical explanations for monthly and daily seasonality, there has been little if any effort made to formulate explanations for the holiday anomaly and even less in testing these.

US Equity Market Evidence

In another point of similarity with other calendar anomalies, the evidence of unusual behaviour of stock indices around holidays has a long history. There is also a long history of its having been ignored by the majority of the profession operating in financial economics. Fields (1934) demonstrated, that the Dow Jones index from 1901 to 1932 exhibited a disproportional large proportion of advances compared to declines on these weekends. Merrill (1966), Fosback (1976) & Hirsch (1986), discuss well known pattern recognition behaviour, noting among these that stocks returns prior to the major US holidays are predominantly positive and abnormally highly so.

In the academic literature early contributions include Lakonishok and Smidt (1988) Pettengill (1989) and Ariel (1990). Lakonishok & Smidt , looking at a ninety year dataset, (Dow Jones Industrial average from Jan 4 1897 to June 11 1986) find that the average pre-holiday daily return was .22% (the average post-holiday return being somewhat smaller at -.017%. This compares to .0094% for other days. 63.9% of pre-holiday days showed positive returns. Pettengill (1989) finds that small firms index show an average pre-holiday return of .46% as opposed to large firms .26%., the non holiday returns being .066% and .018% respectively.

Ariel (1990) examines the 1963-1982 period and finds that the average return pre-holiday is .528% (equally weighted CRSP index) and .364% (value weighted CRSP index) as opposed to .059% and .026% for non pre-holiday returns respectively. This is in keeping with the findings of Theobald & Price (1984) that seasonality, where it exists, will be more prominent in equally weighted indices as opposed to value weighted indices. In terms of the proportion of stocks

showing advances and declines, the situation is more acute. Pre-holiday trading days are associated with a proportion of rising stocks of 85.6% (equally weighted CRSP index) and 75% (value weighted CRSP index), as opposed to 55.8% and 53.8% respectively for other days. . These differences persist across sub-samples, and, like Pettengill, Ariel finds that while different holidays have different returns there is a statistically valid assumption of homogeneity in the returns for all holidays as a set. Parametric and non-parametric tests indicate, unsurprisingly, that these differences are statistically significant.

Brockman and Michayluk (1997) draw upon the work of Bhardwaj & Brooks (1992) to test for the effect of share price as opposed to firm size. They find that, correcting for weekend and January effects, price is at least as important as size in explaining returns pre holidays.

Recent work by Brockman (1995), Brockman and Michayluk (1997) and Brockman and Michayluk (1998) demonstrates the resilience of the holiday effect, showing its persistence across market types (auction v dealer) and size portfolios. Brockman & Michayluk (1997) extend the Kim and Park (1994) US analysis from 1986 to end 1993. Partitioning by price and separately by firm size they find that they duplicate the Kim & Park findings of a holiday effect, and that this continues in the 1987-1993 period. This finding is robust to adjustment for potential January effects.

International Evidence

Cadsby and Ratner (1992) find that pre-holiday effects are evident for US, Canada, Japan, Australia, and Hong Kong. Unlike later studies, UK returns (here the FT-500 from 1983 to 1988) do not exhibit a holiday effect. Perhaps the main contribution of this paper, one that is later confirmed by Kim and Park (1994), is that the holiday effects, where they exist, appear to be driven by local phenomena. They are not reflections of the US, with the possible exception of returns in the Hong Kong Market. There is some evidence that joint Local / US holidays exhibit higher returns.

Kim and Park (1994), correcting for daily and monthly seasonality, find holiday effects in Japan and the UK. Perhaps the major contribution of Kim & Park is in confirming the Cadsby & Ratner finding that that they find that non-US holiday anomalies are not reflections of the US experience. The holiday returns experiences are independent of the US. Fatemi and Park (1996) also find evidence of Japanese holiday effects, but attribute these to the concentration of holidays into the so called Golden Week, when three major public holidays are observed

within a single 7 day period. Agrawal and Tandon (1994) examine the pre-Christmas and pre-new year period, finding that pre-holiday returns are significantly higher than the average daily return in eleven of eighteen countries. Barone (1992) finds that the Italian stock market exhibits a strong pre-holiday effect, with an average return of .27% versus an average non holiday return of -.01% .

Lauterbach and Ungar (1992) examine Israeli stock market data and find that there is a post holiday effect, days after holidays showing an excess return over the average. This result is consistent with that found in Asian markets by Lee, Pettit and Swankoski (1990) and for Sri Lanka by Elyasiani, Perera and Puri (1996). A larger scale study of south east Asian stock market data was undertaken by Chan, Khanthavit and Thomas (1996). Studying Malaysia, India, Singapore and Thailand provides a large set of local, religious and world wide holidays. In addition, the degree of internationalisation of the markets varies from India at the lowest level to Singapore at the highest. They find that while state and cultural holidays both show, in general, positive pre-holiday returns, cultural holiday effects are stronger.

In the UK context, Arsad and Coutts (1997) have shown a significant and positive pre-holiday effect. This is in support of the evidence found by Mills and Coutts (1995). Arsad and Coutts reject the closing effect argument as an explanation of the holiday effect.

The Irish Market

The historical evolution of the Irish equity and capital markets requires that careful consideration be given to the selection of data and time-periods for analysis when examining calendar regularities. Until 1979 Ireland and the United Kingdom operated within a monetary union wherein Irish Punts were fixed at parity with the pound Sterling. Thus, the historical evolution of the Irish stock market was dictated by the of the large liquid London stock exchange ‘next door’. This had a considerable dampening effect on domestic capital market evolution. Many of the larger Irish companies held, and continue to hold, dual listing on both the Irish and London exchanges.

The move out of the monetary union with Irish entry into the Exchange Rate Mechanism of the EEC (sic) in 1979 coincided with the introduction of exchange controls. This artificial market had the effect of over-inflating the values of equities. This overvaluation persisted until the removal of these controls in the 1990’s, aligned with the move towards monetary union with Frankfurt as a focal point for capital, resulted in relative under performance. The move back

into a monetary union at the beginning of 1999 has seen substantial declines in the Irish equity market.

This paper therefore concentrates on the period 1979-1998, when the Irish equity market operated substantially on its own

Data & methodology

Data

One partial explanation for the dearth of published research on the Irish equity market may be the historical lack of appropriate data. Wholly reliable, daily, consistent stock indices are available in Ireland only from the start of January 1988 with the start of publication of the ISEQ index by the Irish stock exchange. In part this has been remedied recently by the release by Datastream International of price indices, for the market as a whole and for four sub sectors. These value weighted indices start from January 1973 and so allow a significant amount of research that may not have been possible before. To date little use has been made of these, the only published research using them being Lucey (2000). In part this may be due to the inherent, but immesurable, survivorship bias that the construction of these indices has incorporated. However, work by Ryan & Donnelly (1998), indicated that in the Irish context survivorship bias may not be severe. This paper uses these indices, as well as the official indices from the stock exchange. To avoid the psssibility of a any one extreme daily change skewing the results, a 5% trim was applied to the indices, the most extreme positive and negative 2.5% of changes being discarded.

The final dataset thus comprises indices for the market as a whole (MARKET and ISEQ), total return indices for the market as a whole, ISEQR, indices for financial services companies (FINANCIAL and ISE-FIN), and for industrial forms (INDUSTRIAL, defined by Datastream as the market less financial and less resource extractive firms) and an index of the market excluding resource extraction, that is to say oil and latterly metal mining and extraction (NOTRESOURECE and ISE-GEN). Suffixing T to the index indicates trimmed indices. Thus TISEQR is the 5% trimmed ISEQ total return index. Data from 2/1/79 to 31/12/98 were used for the Datastream indices and from 2/1/1998 to 31/12/1998 for the Irish stock exchange indices, giving a maximum total of 5056 observations. All analyses are on the daily percentage return.

Methodology

The majority of papers which examine daily, including holiday, seasonality in equity indices have been characterised by the usage of parametric or parametric based testing methodologies. Significant evidence is available that daily seasonality can be profitably examined using non-parametric methods. Indeed, one of the first papers to examine daily seasonality in stocks, Cross (1973), used a pair-wise comparison of days using a Mann-Whitney U test. In general, in papers such as Elyasiani, Perera and Puri (1996), Arsad and Coutts (1996), Arsad and Coutts (1996) or Steeley (1999), the use of non-parametric methods involves the use of an alternative to the standard F test in evaluating the overall explanatory power of daily dummy variables. The papers above employ the Kruskal-Wallis H statistic and note that the results in terms of equality of daily returns across all days are invariant to the nature of the test statistic employed, i.e. the results are the same regardless of whether parametric or non-parametric methods are employed. This paper uses a number of methods, including the Kruskal Wallis test and the Levenes test for equality of variance.

Results

TABLE 1 shows basic descriptive data for these indices. It is clear by observation, which is confirmed by a Kolomogorov-Smirnov test, that the majority of the indices are non-normally distributed. This indicates that, in addition to any parametric tests, non-parametric tests should also be carried out.

TABLE 2 shows means and standard deviations for days preceding and following two different types of holidays. Initially, holidays are defined as those days when the Irish stock exchange was closed. Over the periods of analysis all such days represented official state holidays. No special closings were affected.

Unique Irish holidays are defined as those days on which the Irish market is closed but the US and UK markets are open. If any pre-holiday effects in the Irish indices were in fact driven by the known pre-holiday effects of these markets, we would expect to see the days preceding unique Irish holidays as not being statistically different from days which were not such. Kim and Park (1994) and Cadsby & Ratner (1992) have demonstrated that the anomalous positive pre-holiday returns of their data sets are local, rather than reflections of international, phenomena.

Excess Pre-holiday is defined as Pre-Holiday Mean Return + Post-Holiday Return. If this is positive it indicates that the pre-holiday returns, typically positive, are not fully eroded by the post-holiday return, typically negative. Excess Pre Unique Irish Holiday is defined analogously for uniquely Irish holidays.

Examining the Excess Pre-holiday data we find, congruent with international results, that the market exhibits a positive pre-holiday effect in general. For two indices, a broad market index (MARKET) and an index for financial stocks (FINANCIAL) a negative pre-holiday effect is evident. Interestingly, the effect of trimming the data has been to increase (with the exception of the ISE-GEN and INDUSTRIAL indices) the magnitude of the pre-holiday effect rather than to decrease it.

A slightly different picture emerges from the Pre-Unique Irish holiday. Here we see that all the Datastream indices exhibit a negative pre-unique Irish holiday, with their trimmed versions being positive. The main, official, ISEQ index also shows that effect however, although the other stock exchange indices in both trimmed and untrimmed versions are positive.

Testing formally for such differences, *TABLE 3* & *TABLE 4* show that in almost all cases, at a 5% level, neither for the general nor for the uniquely Irish holidays can we accept, for any index bar one, the total equal weighted index, the equality of mean returns as between days preceding holidays in general or uniquely Irish holidays as against days that are not preceding holidays. Only in the case of FINANCIAL can we accept that there is no pre-holiday effect .There is therefore we can conclude a pre-holiday effect in the Irish market. In addition, the statistical significance of uniquely Irish pre-holidays seems to indicate that the holiday effects are of a local rather than an international origin. This finding is reinforced by the results of non-parametric tests as shown in *TABLE 5* & *TABLE 6.*

However, the variances of the indices, both for general and uniquely Irish holidays, as between pre-holiday and regular days, seem to be statistically similar in a large number of cases. The trimmed indices of the stock exchange indices, in general, seem to have different variance profiles prior to holidays, uniquely Irish or otherwise, although the magnitude of the differences is small. This further strengthens the anomaly – if the risk profiles were similar, as they are here for the untrimmed indices, one might expect the returns to be so also. The evidence indicats that, like what has been found previously, local effects dominate international effects in pre-holiday returns.

Conclusion

The evidence on the pre-holiday effect is that the typical index shows a positive pre-holiday return, this return not being eroded by an equal or greater post holiday decline, and that these returns are locally derived rather than internationally derived. The evidence presented here is that while the Irish market conforms to the second prescription, the first cannot be as easily accepted. For days preceding uniquely Irish holidays there is a statistically significant negative return in a number of indices, in particular the ISEQ, the official stock exchange benchmark index. This indicates that holiday effects are local in origin. However, the positive pre-holiday effect found in the literature is also present, sufficiently positive to numerically swamp the negative local influence. This result may be driven by a small number of returns, as the pattern is different and easier to interpret in data that has been subjected to a 5% trim. In this data the local influences are still statistically significant, indicating a local origin for the pre-holiday returns, with the holiday period as a whole returning an excess positive return. The results here show the importance of separating local and international influences and of checking that results are not driven by a small number of extreme results.

TABLE 1 : DESCRIPTIVE STATISITCS

Index	N	Mean	Std. Deviation	Skewness	Kurtosis	KS Z statistic	p-value
ISEQ	4041	0.030	0.457	-0.550	17.214	8.243	0.000
ISEQR	2778	0.030	0.393	-0.247	8.028	3.76	0.000
ISE-FIN	2516	0.031	0.546	-0.186	5.779	3.707	0.000
ISEGEN	2516	0.016	0.372	-0.450	13.364	3.704	0.000
FINANCIAL	5056	0.025	0.562	-0.406	9.167	5.979	0.000
INDUSTRIAL	5056	0.021	0.455	-1.072	25.078	6.905	0.000
MARKET	5056	0.023	0.437	-1.117	20.284	6.379	0.000
NOTRES	5056	0.022	0.453	-1.020	24.364	6.893	0.000
TISEQ	3637	0.028	0.232	0.238	0.448	7.821	0.000
TISEQR	2500	0.029	0.246	0.099	-0.342	1.046	0.224
TISE-FIN	2264	0.032	0.343	0.163	-0.316	1.732	0.005
TISEGEN	2264	0.015	0.230	0.054	-0.366	1.018	0.251
TFINANC	4550	0.026	0.340	0.140	-0.215	2.921	0.000
TINDUST	4550	0.022	0.257	0.133	-0.276	2.306	0.000
TMARKET	4550	0.024	0.255	0.128	-0.316	1.662	0.008
TNOTRES	4791	0.026	0.295	0.169	0.203	3.033	0.000

TABLE 2 : MOMENTS OF THE DISTRIBUTION: DAYS PRECEEDING AND POST HOLIDAYS

Measure		ISEQ	ISEQR	ISE-FIN	ISE-GEN	TISEQ	TISEQR	TISE-FIN	TISE-GEN
Pre Holiday	Mean	0.035	0.048	0.082	0.054	0.058	0.079	0.094	0.066
	N	115	80	73	73	112	77	69	68
	Std. Deviation	0.268	0.278	0.407	0.276	0.232	0.234	0.294	0.221
	Kurtosis	1.838	1.404	4.213	0.575	0.645	-0.007	0.415	-0.434
	Skewness	-0.440	-0.547	-0.770	-0.224	0.342	0.263	0.162	0.087
Post Holiday	Mean	-0.003	0.043	0.061	0.041	0.043	0.037	0.068	0.013
	N	114	79	72	72	92	56	59	56
	Std. Deviation	0.606	0.666	0.792	0.609	0.222	0.225	0.331	0.217
	Kurtosis	9.453	7.657	8.112	11.892	1.909	0.799	0.201	1.119
	Skewness	-1.696	-1.437	-0.864	-0.990	0.728	0.388	0.427	0.388
Pre Unique Irish Holiday	Mean	-0.005	-0.003	0.002	0.010	0.017	0.041	0.059	0.053
	N	78	53	48	48	76	50	46	45
	Std. Deviation	0.249	0.284	0.410	0.274	0.213	0.223	0.304	0.224
	Kurtosis	2.272	1.266	4.584	0.356	0.861	-0.300	0.562	-0.579

	Skewness	-0.782	-0.791	-1.380	-0.527	-0.033	0.077	0.159	0.103
Post Unique Irish Holiday	Mean	-0.030	0.035	0.043	0.019	0.051	0.051	0.052	-0.005
	N	64	44	40	40	50	30	31	31
	Std. Deviation	0.735	0.800	0.952	0.745	0.244	0.273	0.362	0.262
	Kurtosis	7.079	6.349	6.695	9.471	1.398	-0.142	-0.151	-0.028
	Skewness	-1.662	-1.562	-0.880	-1.001	0.613	0.060	0.139	0.272
Total	Mean	0.030	0.030	0.031	0.016	0.028	0.029	0.032	0.015
	N	4041	2778	2516	2516	3637	2500	2264	2264
	Std. Deviation	0.457	0.393	0.546	0.372	0.232	0.246	0.343	0.230
	Kurtosis	17.214	8.028	5.779	13.364	0.448	-0.342	-0.316	-0.366
	Skewness	-0.550	-0.247	-0.186	-0.450	0.238	0.099	0.163	0.054
Excess Pre-holiday	Mean	0.033	0.091	0.143	0.095	0.101	0.116	0.162	0.079
Excess Pre Unique Irish Holiday	Mean	-0.035	0.031	0.045	0.029	0.068	0.092	0.111	0.048
		MARKET	FINANCIAL	NOTRESOU	INDUSTRI	TMARKET	TFINANCIAL	TNOTRES	TINDUST
Measure	Mean	0.022	0.015	0.019	0.028	0.041	0.038	0.028	0.019
Pre Holiday	N	143	143	143	143	136	137	140	132
	Std. Deviation	0.305	0.380	0.308	0.331	0.233	0.294	0.262	0.221
	Kurtosis	3.079	4.232	3.943	3.206	0.504	0.287	1.285	-0.036
	Skewness	-0.403	-0.914	-0.429	0.172	0.239	0.092	0.059	-0.016

	Mean	-0.024	-0.073	-0.003	0.005	-0.003	0.018	0.004	0.001
Post Holiday	N	143	143	143	143	114	115	132	123
	Std. Deviation	0.663	0.842	0.667	0.643	0.247	0.321	0.321	0.271
	Kurtosis	9.426	7.107	15.460	14.588	0.689	0.303	0.419	0.259
	Skewness	-0.750	-0.583	-1.182	-1.039	0.391	0.135	0.396	0.465
	Mean	-0.011	-0.019	-0.015	-0.006	0.011	0.014	-0.006	-0.007
Pre Unique Irish Holiday	N	97	97	97	97	92	93	96	90
	Std. Deviation	0.289	0.397	0.270	0.304	0.215	0.298	0.259	0.207
	Kurtosis	3.817	4.628	1.659	3.487	0.905	0.163	1.564	0.200
	Skewness	-0.248	-1.145	-0.264	0.594	0.176	0.071	-0.073	-0.049
	Mean	-0.062	-0.146	-0.022	-0.011	0.001	-0.001	0.015	0.022
Post Unique Irish Holiday	N	80	80	80	80	58	58	71	67
	Std. Deviation	0.827	1.036	0.840	0.808	0.278	0.351	0.337	0.309
	Kurtosis	6.143	4.600	10.368	9.864	-0.039	-0.383	-0.400	-0.466
	Skewness	-0.666	-0.478	-1.065	-0.954	0.379	-0.125	0.240	0.360
	Mean	0.023	0.025	0.022	0.021	0.024	0.026	0.026	0.022
Total	N	5056	5056	5056	5056	4550	4550	4791	4550
	Std. Deviation	0.437	0.562	0.453	0.455	0.255	0.340	0.295	0.257
	Kurtosis	20.284	9.167	24.364	25.078	-0.316	-0.215	0.203	-0.276

	Skewness	-1.117	-0.406	-1.020	-1.072	0.128	0.140	0.169	0.133
Excess Pre-holiday	Mean	-0.001	-0.057	0.016	0.033	0.038	0.055	0.031	0.020
Excess Pre Unique Irish Holiday	Mean	-0.072	-0.165	-0.037	-0.017	0.013	0.012	0.008	0.015

TABLE 3 : TESTING FOR EQUALITY OF VARIANCE AND MEANS: DAYS PRECEEDNG HOLIDAYS VERSUS OTHER DAYS

	Levene's Test for equality of variance	p-value	t-test for equality of means	p-value
ISEQ	5.805	0.016	-0.135	0.893
ISEQR	4.343	0.037	-0.413	0.680
ISE-FIN	4.263	0.039	-0.809	0.419
ISE-GEN	1.887	0.170	-1.191	0.237
FINANCIA	11.778	0.001	0.212	0.832
INDUSTRI	5.290	0.021	-0.180	0.857
MARKET	8.118	0.004	0.022	0.983
NOTRESOU	8.059	0.005	0.062	0.951
TISEQ	-	0.990	-1.405	0.163
TISEQR	0.696	0.404	-1.888	0.063
TISE-FIN	3.419	0.065	-1.769	0.081
TISEGEN	0.210	0.647	-1.926	0.058
TFINANC	7.050	0.008	-0.399	0.690
TINDUST	9.038	0.003	0.130	0.896
TMARKET	4.906	0.027	-0.785	0.432
TNOTRES	7.235	0.007	-0.051	0.960

TABLE 4 : TESTING FOR EQUALITY OF VARIANCE AND MEANS: DAYS PRECEEDNG UNIQUE IRISH HOLIDAYS VERSUS OTHER DAYS

	Levene's Test for equality of variance	p-value	t-test for equality of means	p-value
ISEQ	6.25	0.012	0.668	0.504
ISEQR	2.691	0.101	0.634	0.526
ISE-FIN	2.923	0.087	0.379	0.705
ISE-GEN	1.429	0.232	0.141	0.888
FINANCIA	5.646	0.018	0.898	0.369
INDUSTRI	6.181	0.013	0.694	0.488
MARKET	7.454	0.006	0.872	0.387
NOTRESOU	8.146	0.004	0.891	0.373
TISEQ	1.889	0.169	-1.143	0.259
TISEQR	1.097	0.295	0.442	0.66
TISE-FIN	1.776	0.183	1.253	0.21
TISEGEN	0.035	0.852	-0.604	0.549
TFINANC	3.553	0.059	0.11	0.913
TINDUST	10.121	0.001	0.567	0.571
TMARKET	8.498	0.004	-0.359	0.721
TNOTRES	7.151	0.008	0.712	0.477

TABLE 5 : NONPARAMETRIC TESTING FOR EQUALITY OF VARIANCE AND MEANS: DAYS PRECEEDNG HOLIDAYS VERSUS OTHER DAYS

	Mann-Whitney U	Wilcoxon W	p-value
ISEQ	216866	7925567	0.469
ISEQR	101237	3742188	0.345
ISE-FIN	79528	3064874	0.115
ISE-GEN	80821	3066167	0.172
FINANCIA	347429	12418670	0.823
INDUSTRI	347999.5	12419240	0.849
MARKET	348054	12419295	0.851
NOTRESOU	347941	12419182	0.846
TISEQ	182767	6397342	0.178
TISEQR	82666	3019342	0.089
TISE-FIN	66003	2476113	0.069
TISEGEN	65138	2477444	0.073
TFINANC	293493	10032984	0.561
TINDUST	290814.5	10052386	0.959
TMARKET	289732	10033637	0.490
TNOTRES	320978	11139204	0.776

TABLE 6 : NONPARAMETRIC TESTING FOR EQUALITY OF VARIANCE AND MEANS: DAYS PRECEEDNG UNIQUE IRISH HOLIDAYS VERSUS OTHER DAYS

	Mann-Whitney U	Wilcoxon W	p-value
ISEQ	150360	153441	0.679
ISEQR	70124.5	71555.5	0.718
ISE-FIN	58369	3105115	0.863
ISE-GEN	58218	3104964	0.839
FINANCIA	233297	238050	0.612
INDUSTRI	227050	231803	0.344
MARKET	227587.5	232340.5	0.364
NOTRESOU	227410	232163	0.357
TISEQ	134964	137890	0.969
TISEQR	59401.5	3061877	0.714
TISE-FIN	47717	2508588	0.452
TISEGEN	45399	2508489	0.297
TFINANC	204999	209370	0.857
TINDUST	189462	193557	0.362
TMARKET	199219.5	203497.5	0.639
TNOTRES	213848	218504	0.391

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