# VIABILITY OF THE IRISH EQUITY MARKET



Dr. John Cotter, Director of the Centre for Financial Markets, University College Dublin,

This paper assesses the viability of the Irish Stock Exchange. Overall the prognosis is positive with a few notable exceptions. On the downside some trading characteristics including thin trading and an uncompetitive market structure are identified. However on the upside there are a number of reasons to be confident for the future of Irish equity investments. Importantly, the risk and return performance compares favourably with other major equity markets since 1990. This relatively strong performance continues in the new millennium even for the more volatile climate facing investors. The analysis suggests that the ISEQ offers opportunities for international diversification and the use of exploitable trading rules.

### **INTRODUCTION**

Many commentators have raised doubts regarding the future viability of the Irish Stock Exchange. Internationally, the Irish equity market is characterised as being a small regional market with low levels of trading activity. Increased competition has led to a contraction of many such small regional markets at the expense of larger global markets. Furthermore, as with all equity markets, the recent return performance of the Irish market has made it difficult to attract new investors. Given this uncertain background, this paper readdresses the viability of the Irish market and generally finds positive performance characteristics ensuring its future.

The future viability of the Irish equity market is important for different economic agents who are active participants on the Exchange. For instance, Irish companies can raise much needed finance and are allowed to expand in their home market before continuing their expansion in other markets. In addition, financial intermediaries gain by their involvement in the issuing process and acting as brokers in equity trading. Also, Irish investors who suffer from home country bias may not come to the market if trading in Irish equities were restricted. Furthermore, international investors who allocate their funds to the ISEQ would no longer invest in the Irish economy. Moreover, problems in the equity market would affect other parts of the Irish Stock Exchange such as the bond market and would reduce the Government's ability to raise finance. Thus analysis of the welfare of the market has vital consequences.

The analysis is based on investigating the characteristics of the Irish equity market. Also, the performance of the Irish market since 1990 - and in more detailed focus since the start of the new millennium - is compared with those markets with which it has strongest links; namely, the UK, US and German markets. The linkages with the UK are historical in that the Irish Stock Exchange was originally a member of the London Stock Exchange; they also relate to the tradition of many companies listing on both exchanges. Similarly, it is common these days for Irish companies to trade in Dublin and in the US in the form of an ADR (American Depository Receipt). More fundamentally, the analysis recognises the US as the world leading and most influential equity market. Relationships with the German market should also have strengthened due to the development of the euro and related attempts to create a single (financial) market.

At the outset it is important to recognise that Ireland is a small open economy heavily reliant on its international trading partners. And financial markets are even more open with large capital flows between respective trading centres implying extensive competitive pressures between equity exchanges.

# TRADING CHARACTERISTICS

A number of different assets are traded on the Irish Stock Exchange but the analysis concentrates on the equity market.<sup>[1]</sup> Characteristics of the Irish equity market are outlined in Table 1, concentrating on the ISEQ index. Here many attributes are indicative of a contracting market reflecting negatively on the recent competitiveness of the Exchange. However, these poor indicators are synonymous with world equity markets during the recent bear period and are starting to reverse with the current upswing across markets.

Table 1 shows that the market capitalisation value of companies traded on the ISEQ index has increased in 2003, going some way to reversing the very large decline that occurred in 2002. However, market value has yet to return to the highs of 2000 and 2001. The quoted index value followed a similar pattern with a recent increase going some way to bringing the index back to the 2000 level. Also, the level of trading activity measured by turnover increased in 2003 and has more than doubled since  $2000.^{[2]}$  However, the Irish market is small by international standards with average daily turnover of €306m during 2003.

<sup>[1]</sup> Fixed income (government and corporate bonds), derivatives (covered warrants) and mutual funds (investment funds) are available for investment. These latter two investment types are only recently available and represent a small portion of trading activity on the Exchange.

<sup>[2]</sup> Turnover includes activity on the ISEQ plus other small contributions from hybrid (Over-the-Counter) markets trading on the Irish Stock Exchange including the technology based ITEQ index, the Explorations Securities Market and the Developing Companies Market.

	2003	2002	2001	2000
Market Capitalisation (€m)	62,548	52,234	78,633	79,851
Turnover (€m)	77,516	70,255	51,042	31,463
Index Value	4,920.7	3,995.0	5,707.0	5,723.5
No. of Companies	54	59	67	76
Money Raised (€m)	721	1,635	4,239	5,192
No. of Companies Raising Funds	35	35	57	48
No. of Companies Entering Market	0	0	2	3
No. of Companies Leaving Market	10	11	11	8

#### TABLE 1: TRADING CHARACTERISTICS OF IRISH EQUITY MARKET

Source:

Irish Stock Exchange Annual Review, 2003.

The structure of the market is cause for some concern however, with the top five companies accounting for more than 60% of the value of the ISEQ index and over 75% of trading on the Official List. Relatively speaking, very little trading occurs in the remaining companies although exchange membership allows them to expand by raising finance using alternative issuing processes. Thin trading gives rise to the possibility of poor price signalling, signifying an unattractive feature for investors. Investors face a degree of uncertainty caused by prices that lack transparency with little movement for long periods followed by strong movements not necessarily related to company fundamentals. Moreover, the ISEQ is dominated by the financial sector. Thus, an investor's ability to obtain a truly diversified portfolio just from choosing companies traded in Dublin would be compromised, but this should not discourage investors from picking individual Irish equities as part of a European-based portfolio.

An issue that has arisen is whether there will be a restructuring of the Irish financial sector with the takeover of one of the leading banks by a foreign competitor commonly being mentioned. The fallout from such an event could have very negative consequences for the ISEQ but would more likely result in a fairly neutral impact. If in the unlikely circumstances the takeover would involve exiting from the Exchange, then the market would shrink further and accentuate the thin trading problem that already exists. However, a more likely scenario would see the new participant continuing an association with the ISEQ, thus ensuring that the previously dominant Irish bank maintained its high domestic profile.

Table 1 also shows that the choice of companies on the exchange is shrinking, with only 54 companies in 2003 falling from 76 in 2000. Companies leaving the exchange exceeded the small number of new entrants. In particular, no new IPO occurred

recently but some major players are no longer listed. Household names such as Bula Resources, Dunloe Ewart, Riverdeep and a major player on the market, Jefferson Smurfit, have exited the ISEQ. Unfortunately, these are hard to replace.<sup>[3]</sup> In general, a similar pattern emerges from world financial markets characterised as having very few net additions listed during the recent bear market. Also, the Irish market has fared poorly in attracting new investors, with just €721m raised in capital in 2003 compared to €5,192m in 2000 and few primary issues of new stock. This also would negatively affect the financial intermediaries involved in the issuing process. Overall, this paints a somewhat unpromising picture for the future viability of the Irish equity market with reduced choice for potential investors and would have serious consequences for the investment industry in Ireland.

### **RISK AND RETURN PERFORMANCE**

Given the characteristics outlined, it is interesting to assess the risk and return performance of the Irish market in an international context. Whilst having a passing interest in the characteristics of a market, investors are more fundamentally concerned with the return and risk outcomes of their portfolio. These are the key outcomes affecting investor decision-making. Using portfolio theory, investors maximise their utility of wealth by either maximising returns for given levels of risk or minimising risk for given levels of return.<sup>[4]</sup> Thus, investors are interested in optimising the risk and return trade-off. Investors are assumed to be risk-averse and need to be compensated by higher returns to incur higher risk. Favourable risk and return performance attracts new investor interest and allows the market to continue and flourish; but unfortunately the opposite is also true. A number of measures which are advocated by standard portfolio theory to aid investors in their decision-making process are now examined.

The descriptive statistics in Table 2 detail average daily returns, average daily volatility measured by standard deviation, average return per unit of risk measuring risk adjusted return and an average estimate of market linkage using correlations between the ISEQ and other equity indexes. The timeframe chosen is 1st January 1990 to 31st June 2003, with a strong emphasis on analysing performance in this decade. These statistics are calculated using daily prices from indices representing Irish, UK, US and German markets. The price performance of all indices is similar, showing large gains through the 1990s followed by a sharp decline at the start of the new millennium with some possibility of a recent recovery - see Figure 1.

#### **TABLE 2: DESCRIPTIVE STATISTICS OF EQUITY MARKETS**

	ISEQ	FTSE100	DAX30	S&P 500					
RETURNS									
1/1/90 - 30/6/03	0.025	0.014	0.009	0.029					
1/1/99 - 30/6/03	-0.013	-0.032	-0.043	-0.020					
1/1/00 - 30/6/00	-0.016	-0.072	-0.012	-0.008					
1/7/00 - 31/12/00	0.117	-0.011	-0.071	-0.075					
1/1/01 - 30/6/01	0.090	-0.075	-0.065	-0.058					
1/7/01 - 31/12/01	-0.092	-0.060	-0.124	-0.049					
1/1/02 - 30/6/02	-0.143	-0.088	-0.143	-0.115					
1/7/02 - 31/12/02	-0.130	-0.126	-0.308	-0.089					
1/1/03 - 30/6/03	0.053	0.018	0.074	0.079					
VOLATILITY									
1/1/90 - 30/6/03	0.993	1.067	1.439	1.044					
1/1/99 - 30/6/03	1.167	1.378	1.814	1.358					
1/1/00 - 30/6/00	1.177	1.362	1.646	1.536					
1/7/00 - 31/12/00	1.006	0.978	1.208	1.205					
1/1/01 - 30/6/01	1.129	1.210	1.350	1.419					
1/7/01 - 31/12/01	1.284	1.483	1.992	1.228					
1/1/02 - 30/6/02	1.094	0.941	1.429	1.143					
1/7/02 - 31/12/02	1.590	2.213	2.833	1.962					
1/1/03 - 30/6/03	1.089	1.546	2.356	1.281					
RETURN PER UNIT OF RISK									
1/1/90 - 30/6/03	0.025	0.014	0.006	0.028					
1/1/99 - 30/6/03	-0.011	-0.023	-0.024	-0.015					
1/1/00 - 30/6/00	-0.013	-0.053	-0.007	-0.005					
1/7/00 - 31/12/00	0.116	-0.011	-0.059	-0.062					
1/1/01 - 30/6/01	0.080	-0.062	-0.048	-0.041					
1/7/01 - 31/12/01	-0.071	-0.040	-0.062	-0.040					
1/1/02 - 30/6/02	-0.131	-0.094	-0.100	-0.101					
1/7/02 - 31/12/02	-0.082	-0.057	-0.109	-0.045					
1/1/03 - 30/6/03	0.049	0.011	0.032	0.062					
CORRELATION									
1/1/90 - 30/6/03	1.000	0.532	0.495	0.228					
1/1/99 - 30/6/03	1.000	0.569	0.502	0.259					
1/1/00 - 30/6/00	1.000	0.394	0.403	0.071					
1/7/00 - 31/12/00	1.000	0.408	0.253	0.231					
1/1/01 - 30/6/01	1.000	0.559	0.535	0.223					
1/7/01 - 31/12/01	1.000	0.598	0.595	0.407					
1/1/02 - 30/6/02	1.000	0.457	0.421	0.140					
1/7/02 - 31/12/02	1.000	0.746	0.640	0.389					
1/1/03 - 30/6/03	1.000	0.653	0.474	0.327					

Note:

Descriptive statistics are reported for the full period between 1990 and 2003, for the euro period between 1999 and 2003 and for six-month intervals since 2000.

SEQ FTSE100 **DAX30** S&P500 

For return and risk measures, the ISEQ performed at least as well as the other markets for the full period under analysis. Additionally, more recent claims that the Irish market has not suffered to the same extent as its larger competitors hold up, with the ISEQ exhibiting the best performance.<sup>[5]</sup> For the full period the overall returns on the ISEQ fare better than other markets except the US, with the German market faring worst. Moreover, the volatility of the ISEQ is lower than its counterparts with daily dispersion of 0.993% compared to 1.439% for the DAX30. Thus, in terms of a risk and return trade-off the ISEQ exceeds the DAX. For instance, the daily risk-adjusted return for the German market fares four times worse than the ISEQ. Since the introduction of the euro the ISEQ provides investors with a better optimal utility of wealth function than is available in the other markets. Thus, any indications regarding the ISEQ's demise due to, for instance, a lack of trading should be forcefully challenged given its risk and return performance indicators.

The return plots (see Figure 2) give an indication of the performance of the respective markets for the full period. Much time variation in returns is documented with an

FIGURE 1: PLOTS OF EQUITY INDEX PRICES

increase in the magnitude of fluctuations since 2000. Concentrating on the new millennium, a downward trend is evident in Table 2 for all markets with somewhat of a turnaround occurring during the most recent six-month interval. Notwithstanding the positive return performance (that occurred for all markets in 2003), negative returns for the ISEQ occurred in four of the seven sub-periods analysed since 2000. By comparison, negative returns are recorded for all but one of the sub-periods for the other markets. For the ISEQ the worst sub-period was during the first half of 2002 where all markets performed poorly, but it bucked the negative performance of the other markets during the second half of 2000. Overall the return and risk performance of Irish equities is promising in an international context.



**FIGURE 2: PLOTS OF EQUITY INDEX % RETURNS** 

# LINKAGES BETWEEN MARKETS

As the performance of all indices follows a similar trend for the full period, it is interesting to examine the inter-market relationships, and whether the ISEQ influences or is influenced by the other markets and the implications thereof. Investors are interested in international market linkages for a number of reasons. Chief among them is the possibility of international diversification giving rise to a reduction in the overall risk of an investor's portfolio. Diversification benefits occur if investors can combine assets

that are not perfectly positively correlated. The extent of the deviation from a correlation coefficient of +1 determines the potential success of an investor's diversification techniques. Thus increased (decreased) linkages represent a cost (benefit) to international equity selection according to standard international asset pricing models.

Secondly, investors are motivated in trying to use risk and return performance in one market to predict these outcomes in another market. Investors use technical analysis as a key tool in solving their equity selection problem.<sup>[6]</sup> If this analysis works, it provides a description of the trend in asset price movements that can be profitably exploited using trading rules. A simple example would be to identify if one market leads (is led) by another market. This suggests a buy (sell) strategy in the market that is being led when there are positive (negative) price movements in the other market. However, standard finance theory suggests that investors cannot exploit patterns in asset prices as all information is fully incorporated into current prices thereby negating the impact of movements in another market.

Inferring from the correlations in Table 2, the strongest relationship for the Irish market is the UK closely followed by German market returns. On average, the links between the FTSE100 and ISEQ suggest that 1% price movements in one market are associated with a 0.532% move in the other market over the full period. All correlations are positive, although not perfectly so, implying that on average positive (negative) returns in one market are associated with positive (negative) returns for Irish equities. Also, the correlation coefficient with the FTSE100 is twice that of the S&P500 over the full period; but this is not constant during the new millennium as evidenced by the variation in average correlations for six-monthly intervals and by the daily correlations (see Figure 3). Thus, some risk reduction benefits are available at all times through diversification in international stock selection.

<sup>[6]</sup> Technical analysis involves using price and volume information alone to provide signals on future equity price movements. It is used in conjunction with fundamental analysis (using non-price information, for example, economic news information) to aid investors in their stock selection.



Concentrating on the recent market relationships, the strongest linkages for the Irish market occur during the heavy downward trend at the end of 2002. Here correlation between Irish and German equities stood at 0.64. Unfortunately investors find it more difficult to diversify away risk when assets have these large positive correlations. An explanation may be that market linkages increase proportionally more during bear markets compared to bull markets.<sup>[7]</sup> When markets are falling, the argument goes, investors tend to follow a greater herd mentality than in times of bull markets, resulting in increased linkages. An obvious illustration of this is the decline across world equity markets following September 11. However, the linkages in equity markets have reduced since this exceptional time and, in general, are negatively related to market performance. Thus, international diversification, including Irish equities, allows an investor greater risk reduction benefits of late and should continue with the upswing in equity markets in general.

Additionally, any reduction in capital market integration between the ISEQ and DAX30 during recent times goes against the much argued outcome that the development of the euro would increase market linkages due to the elimination of exchange rate risk between participating members. In a recent discussion of financial market integration,

Pat McArdle notes that many obstacles remain that hinder equity market integration; namely, restrictive costs and more complicated completion mechanisms for cross-border investments and disharmonious taxation and accounting outcomes for the market participants.<sup>[8]</sup> Thus, the introduction of the euro per se does not imply that European capital markets will suddenly have continuous increases in integration, but may involve an overall trend in stronger equity market relationships that varies according to specific time frames.

However, analysis of correlation by itself however does not tell us about the causality in the relationship between the markets. In order to fully examine these market linkages over time, a bivariate return and volatility model is applied to each market pair incorporating the ISEQ and other respective markets.<sup>[9]</sup> The return and volatility spillover effects are examined separately indicating the magnitude and direction of linkages and findings (see Table 3).

<sup>[8]</sup> See McArdle, Irish Banking Review, 2003. The article also maintains that possible advantages arising from the introduction of the Euro would increase market integration including an increase in the internationalisation of equity issues, increased pan European merger and takeover activity, and an increased transparency for potential investors throughout Europe. On the other hand international investment suffers with increased linkages from higher risk portfolios due to reduced diversification effects.

<sup>[9]</sup> The bivariate return and volatility linkages are examined with a VAR (1) – GARCH (1, 1) model developed by Engle and Kroner (1995). The model is well specified according to various diagnostics. Further details of the theoretical underpinnings, workings and results of the model are given in Cotter (2003) and are available on request. The model not only outlines causality between the markets but also gives the daily volatility and correlations.

52	

#### TABLE 3: SPILLOVER EFFECTS FOR ISEQ INDEX

	TO ISEQ					FROM ISEQ						
	FTS	E100	DAX30		S&P 500		FTSE100		DAX30		S&P 500	
RETURNS												
1/1/90 - 30/6/03	0.17	(9.22)	0.11	(8.48)	0.21	(13.46)	0.06	(2.98)	0.06	(3.12)	0.00	(0.10)
1/1/99 - 30/6/03	0.11	(3.82)	0.14	(6.53)	0.20	(8.34)	0.02	(0.49)	0.08	(2.31)	-0.02	(-0.60)
1/1/00 - 30/6/00	0.01	(0.13)	0.12	(1.39)	0.06	(0.93)	0.10	(1.05)	0.12	(1.11)	0.01	(0.09)
1/7/00 - 31/12/00	0.17	(1.68)	0.20	(2.22)	0.25	(2.57)	0.06	(0.62)	0.07	(0.73)	0.07	(0.78)
1/1/01 - 30/6/01	0.14	(1.61)	0.26	(2.98)	0.10	(1.36)	0.00	(0.00)	0.09	(0.69)	-0.03	(-0.33)
1/7/01 - 31/12/01	0.19	(2.02)	0.22	(3.32)	0.27	(3.56)	0.09	(0.79)	0.23	(1.98)	0.12	(1.09)
1/1/02 - 30/6/02	-0.05	(-0.43)	0.04	(0.58)	-0.08	(-0.91)	-0.05	(-0.58)	-0.01	(-0.09)	-0.07	(-0.71)
1/7/02 - 31/12/02	0.07	(0.62)	0.15	(2.01)	0.30	(3.83)	0.11	(0.67)	0.20	(1.53)	-0.18	(-1.87)
1/1/03 - 30/6/03	0.01	(0.13)	0.19	(3.58)	0.25	(3.37)	-0.10	(-0.69)	-0.03	(-0.35)	-0.13	(-1.33)
VOLATILITY												
1/1/90 - 30/6/03	0.01	(0.11)	-0.02	(-2.26)	0.04	(6.33)	-0.03	(-1.10)	-0.03	(-2.26)	-0.04	(-7.76)
1/1/99 - 30/6/03	0.05	(0.88)	0.01	(0.11)	-0.27	(-6.16)	0.03	(0.24)	0.02	(0.42)	0.19	(6.30)
1/1/00 - 30/6/00	-0.50	(-4.30)	-0.34	(-1.47)	-0.12	(-0.51)	-0.59	(-6.59)	-0.50	(-7.86)	-0.19	(-2.78)
1/7/00 -31/12/00	-0.26	(-1.02)	0.18	(0.93)	-0.90	(-1.61)	-0.52	(-1.29)	-0.32	(-1.12)	-0.45	(-1.74)
1/1/01 - 30/6/01	0.21	(0.03)	-0.02	(-0.10)	0.54	(1.86)	0.52	(0.06)	-0.01	(-0.13)	0.26	(2.67)
1/7/01-31/12/01	-0.47	(-3.40)	-0.89	(-7.78)	-0.76	(-8.72)	0.38	(4.24)	0.24	(7.03)	0.58	(6.87)
1/1/02-30/6/02	0.84	(6.19)	-1.06	(-0.06)	-0.14	(-0.73)	-0.70	(-6.74)	0.57	(0.26)	0.18	(3.06)
1/7/02-31/12/02	-0.24	(-4.03)	-0.61	(-5.58)	-0.03	(-0.02)	0.02	(0.27)	0.15	(5.30)	0.17	(0.27)
1/1/03-30/6/03	0.44	(1.24)	1.59	(0.73)	-0.25	(-0.96)	0.40	(1.16)	-0.31	(-1.77)	0.39	(2.89)

#### Notes:

The modelling process is outlined in Cotter (2003). The results are reported after first removing currency effects. T-statistics are given in (). Spillover effects are reported for the full period between 1990 and 2003, for the euro period between 1999 and 2003 and for six-month intervals since 2000.

The results suggest that return linkages to, but not from, the Irish market dominate spillover effects for the full period and are repeated for the decade so far. These spillover effects are positive, suggesting that returns movements in one market are followed by movements in the Irish market in the same direction. Return causality is generally uni-directional, especially since the introduction of the Euro, indicating a lack of influence on the part of the Irish market on its counterparts. These recent return spillover effects are dominated by US and German market activity suggesting that the German market is becoming more relevant for investor activity in Dublin. The strongest return spillover effects to the Irish market from all markets occurs around September 11, whereas the weakest effect occurs in the subsequent period for the DAX30 and S&P500 indices and during early 2003 for the FTSE100 index. Nonetheless, these spillovers to

the ISEQ are always positive, whereas return causality from the Irish market is weak and less structured. Thus, investors who use technical analysis can benefit from the trading patterns that exist for the ISEQ.

As well as examining return linkages, volatility spillovers are also examined. Given the signalling effect from the return analysis, it is expected that the return linkages would be associated with volatility linkages. Otherwise, it is possible to obtain higher risk-adjusted returns from taking return signals from the international markets to buy and sell Irish equities. Surprisingly, the evidence is that volatility spillovers are generally weak over the full period with the exception of strong effects between the ISEQ and S&P500. Moreover, volatility linkages between the markets are extremely time varying since 2000, with very strong as well as very weak linkages occurring for the Irish Market. Many of the recent six-month intervals show negligible volatility spillovers. However, the significant spillover effects tend to be bi-directional, suggesting that market fluctuations affect markets per se rather than from one markets.

The existence of these spillover effects suggests investors can use information in one market to help them predict movements (and its direction) in the Irish market using technical analysis; and this is particularly relevant since 2000.<sup>[10]</sup> This is very attractive, as is the continuing good health of the ISEQ, as it allows investors to obtain a higher return by following a simple trading rule of buying (selling) Irish equities when the returns on foreign markets are positive (negative). And this is in addition to the higher risk-adjusted return profile already outlined for the Irish market. Furthermore, using return spillovers as a trading signal generally is not compromised by uni-directional volatility causality. Thus, investors can obtain an increased risk-adjusted return that allows them to beat the relatively strong performance of the ISEQ, meeting normal investment objectives. In overall terms the Irish equity market offers many attractive opportunities to investors.

## SUMMARY AND CONCLUSIONS

The goal of this paper is to assess the viability of the Irish Stock Exchange, especially since the recent downturn in capital markets. The continued success of the market is important for a large number of economic agents including domestic investors, international investors, domestic companies, financial intermediaries and the Irish government as they all actively participate in the market. Three separate issues are examined, namely the characteristics of the market, the recent relative performance of

the market, and linkages with other equity markets. How well the Irish market does with respect to these issues determines the conclusions on the Exchanges future viability. Generally the outcomes on these issues tend to be positive.

Whilst some of the characteristics put the Exchange in an unfavourable light recently such as the dominance of large firms by a single sector, thin trading in most companies and the reduced number of companies for investors to choose from - there are some positive features. In particular, turnover has increased substantially and the overall size of the market has shown recent growth. In terms of risk and return performance, the ISEQ fares better than the other markets with which it is most closely associated by exhibiting relatively better returns and lower risk. These results hold for a long sample period but continue since 2000 even in a more volatile climate. In addition, the timevarying correlations suggest that choosing Irish equities as part of equity selection criteria has diversification benefits that can reduce an investors overall portfolio risk. Finally, return spillover effects suggest causality in the direction of, but not from, the Irish market allowing investors a signal of future return movements that could be incorporated into a profitable trading strategy.

Given the implications of the issues examined, the future of the Irish Stock Exchange remains bright. Notwithstanding some possible detrimental structural characteristics, positive risk - adjusted performance as well as opportunities to exploit some simple trading rules provide avenues to attract sufficient new investors in the immediate future.

# REFERENCES

Cotter, J., 2003, "Trading relationships for the Irish equity market", paper presented at the symposium on International Equity Market Integration at Trinity College Dublin, Forthcoming in International Review of Financial Analysis.

Elton, E. J., Gruber, M. J., Brown, S. J. and W. N. Goetzman, 2003, Modern portfolio theory and investment analysis, 6th edition, Wiley.

Engle, R. F., and K. Kroner, 1995, Multivariate simultaneous generalized GARCH, Econometric Theory, 11, 122-150, Irish Stock Exchange Annual Review, 2003.

Longin, F. M., and B. Solnik, 2001, Extreme correlation in international equity markets, *Journal of Finance*, 56, 649-676.

McArdle, P, 2003, "Financial market integration: a review after five years of EMU", *Irish Banking Review*, Autumn, pp. 18-27.