

UNIVERSITY OF STRATHCLYDE
DEPARTMENT OF ACCOUNTING AND FINANCE

**THE LONG-RUN SHARE PRICE PERFORMANCE OF SEASONED
EQUITY OFFERINGS (SEOs): EVIDENCE FROM UK EQUITY
RIGHTS ISSUES 1986-1995**

PROCHES MESHILI KIWANGO NGATUNI

B.Com. (Hons.), M.Sc.

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DECLARATION

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DEDICATION

This thesis is dedicated to:

my beloved wife,

my dear children,

and

my parents.

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ABSTRACT

The much-documented evidence of long-run underperformance following seasoned equity offerings is biased towards public offers and has been attributed mainly to overvaluation exploitation, due to information asymmetry between firm managers and prospective investors. This thesis investigates the long-run performance of seasoned equity offerings (SEOs) via rights issues. Because the new shares in a rights issue are offered *pro rata* to the existing shareholders, overvaluation exploitation is hardly a plausible explanation for their subsequent performance. Consequently, rather than testing the overvaluation exploitation, or other suggested hypotheses, the thesis focuses on a variety of issue and issuing firm characteristics, including ownership structures, as possible explanations of post-issue performance.

The thesis uses 818 independent equity rights issues conducted on the London Stock Exchange during the period 1986-1995. The buy-and-hold abnormal returns (BHARs) model is employed. For each issuer, returns on a control (nonissuing) firm conservatively chosen by size, size and industry, and size and market-to-book ratios, are used to proxy for expected returns. Both parametric and nonparametric tests are used to assess the significance of the abnormal returns. The average BHARs are then segmented into categories according to issue characteristics, firm characteristics, and ownership structure, and compared across the sample segments.

Consistent with the SEO underperformance literature, investments in the shares of firms making rights issues underperform all benchmarks, over all horizons considered. The underperformance is not significantly different across firm size, market-to-book ratio, issue size quintiles, or across different uses of issue proceeds. It is more severe for firms issuing during periods of high issue activities, for younger firms and for firms that had high prior issue frequency. The underperformance is prevalent in many industry sectors. However, it is stronger in the “engineering” sector but none is found in the “mining” and “electronic and electricals” sectors. Surprisingly, the underperformance disappears in the later years of the sample period. The ownership structures of

issuers changed significantly following the rights issues but the impact of these changes on the BHARs depends on the pre-offering levels of ownership.

The results suggests that the underperformance phenomenon is neither a market nor offer-method specific. Also within the BHARs framework, the choice of benchmarks makes no difference. Having controlled for size, industry, and market-to-book ratios, the underperformance can still be explained partly by some of the other issue and firm characteristics. Moreover, while the post-offering ownership structure has a weak explanatory power, its changes around the offering potentially explain part of the underperformance when pre-offering ownership levels are taken into account.

CHAPTER ONE

AN OVERVIEW OF THE PROBLEM MOTIVATION AND OBJECTIVES

1.1 Introduction

One anomaly in corporate finance that has received much attention recently is the economically significant long-run stock underperformance following seasoned equity offerings (SEOs). The finance theory shows that an equity-issue announcement is interpreted by investors as bad news and therefore it should be associated with a negative stock market price reaction (Myers and Majluf, 1984; Miller and Rock, 1985; Lucas and McDonald, 1990). An exception is Cooney and Kalay (1993) who show that by assuming an availability of negative net present value projects, the share price reaction could be positive.

There is a growing body of empirical evidence in support of this theoretical prediction. For example, Smith (1986) and Eckbo and Masulis (1995) provide surveys of articles reporting evidence of market price reaction to security issue announcements and seasoned equity offering announcements, respectively.¹ This body of evidence, notwithstanding, the market price reaction is considered rational because the market prices adjust rapidly and accurately to the information embedded in the announcements, and thus, such a reaction is consistent with market efficiency.

From the standpoint of market efficiency, one would argue that since companies already listed on the market are monitored closely by investors, any mispricing of shares that might result from information asymmetry should only be transitory and the share price should be corrected as soon as investors realise

¹ Recent works to report significant two-day announcement period abnormal returns include Singh (1997), Burton *et al.* (1999, 2000), Michailides (2000), Slovin *et al.* (2000), Suzuki (2000), and Marsden (2000). All studies examine rights issues in the UK except Singh (1997) and Marsden (2000), who examine rights issues in the US and in New Zealand, respectively. On the evidence of positive two-day announcement period abnormal returns see, for example, Tsangarakis (1996) and Bohren *et al.* (1997) on rights issues in Greece and Norway, respectively, and Kato and Schallheim (1992) and Kang and Stulz (1996) on Japanese equity offers.

the mispricing. Consequently, the market price reaction is not expected to last for long. However, numerous studies report strong evidence of long-run underperformance following seasoned equity offerings. See, for example, Loughran and Ritter (1995), Spiess and Affleck-Graves (1995), Jegadeesh (2000), Cai and Loughran (1998), Kang, Kim and Stulz (1999), Cai (1998), Affleck-Graves and Page (1996), Levis (1995), and Suzuki (2000).² Of these studies, Levis (1995), Affleck-Graves and Page (1996), Cai (1998), Michailides (2000) and Suzuki (2000), study rights issues. Since this body of evidence seems to suggest inefficiencies in the financial markets contrary to the long-standing notion of market efficiency, these studies have been challenged in a number of ways.

First is whether conclusions of significant abnormal returns can be used against market efficiency. Fama (1998) argues that the abnormal returns are chance results because the apparent overreaction is about as common as underreaction and the post-event continuation of pre-event abnormal returns is about as frequent as post-event reversals. The author adds that the computation of abnormal returns suffers from methodological problems covering the bad model and misspecification of significance tests. This implies that the growing body of evidence of long-run underperformance could be a consequence of misspecified test statistics and that such evidence might disappear if these misspecifications are properly corrected. Consequently, Fama (1998) adds that even the persistence of significance of the abnormal return after the corrections alone cannot be used as direct evidence against market efficiency. That is, since the anomaly can only be fundamentally defined relative to a model of expected (normal) return behaviour, whenever one concludes that a finding seems to indicate market inefficiency, it may also be evidence that the underlying asset-pricing model is inadequate (Fama, 1970).

Second, Barber and Lyon (1997), Kothari and Warner (1997), and Loughran and Ritter (2000), address the methodological problems regarding the models of abnormal returns, measures of expected return and statistical tests

² Of equal importance is the growing body of research articles that report strong empirical evidence of long-run poor operating performance following the seasoned equity offerings; for example, Loughran and Ritter (1997), McLaughlin, Vasudevan and Safieddine (1996, 1998b), Cai (1998); Cai and Loughran (1998).

for the significance of the abnormal returns. Although some of the recommended methods proved to be well specified than others, the vast majority of the studies that use them still find significant long-run abnormal returns of a magnitude that would be difficult to attribute to chance.

Third is the fact that most of the evidence and follow-up studies are based on the US, where almost all equity offerings are made via firm commitment offers. This calls for the need to examine the anomaly in other markets to investigate whether this phenomenon is either market specific or is a result of data snooping (Fama and French, 1998).

In the cause of investigating these challenges, the anomaly has been investigated not only on equity issues but also on other corporate strategic and financing decisions.³ Fewer studies have examined the anomaly in the UK where rights issue, an offering method different from the US's firm commitment offers, is dominant. In the few studies examining UK rights issues, e.g., Marsh (1979), Levis (1995), Michailides (2000), Suzuki (2000), and Abhayankar and Ho (2001), numerous limitations in terms of methodology and sample can be observed. In addition, apart from estimating the abnormal returns, no attempt has been done to analyse the various issue and issuing firms' characteristics to investigate whether they can help to explain the observed underperformance.

This thesis will examine the anomaly in the UK specifically on equity rights issues. It will focus on the long-run share performance of equity rights issues made by companies listed on the London Stock Exchange (LSE) during the period 1986-1995. It will extend to analyse the numerous issue and issuing firms' characteristics to investigate whether they may help to explain the observed performance. Further extension will explore the ownership structure of the issuing firms to investigate whether the post-offering level of both managerial and institutional share ownership and their changes from the year before the offering may help explaining the observed performance.

³ A few examples include; Spiess and Affleck-Graves (1999) on debt offerings, Lee and Loughran (1998) and McLaughlin, Safieddine and Vasudevan (1998a), and Kang *et al.* (1999), on convertible debt, Ikenberry *et al.* (1995) on share repurchases, Gregory (1997) on acquisitions.

The rest of the chapter is organised as follows: Section 1.2 provides background information on UK equity offering focusing on how it compares mainly with the US. Section 1.3 provides an overview of the problem. Section 1.4 presents the objectives of the study. Section 1.5 briefly outlines the expected contribution, and the scope, of the study as well as the research strategy. Section 1.6 presents the organisation of the thesis.

1.2 Institutional Background

In the UK, companies already listed on the London Stock Exchange (LSE) commonly use rights issues, open offers, placing, or a combination of open offer and placing, to raise additional equity capital (see Chapter 2 for a detailed description of each method). However, this was not the case in the period prior to 1986 during which virtually all further equity issues were made via equity rights issues even though placings were allowed since 1975 (Marsh, 1979). Despite the recent popularity of open offers, placing and a combination of placing and open offers, rights issues still dominate the UK market as a method of issuing additional equity for cash.

The domination of rights issues in the UK can be explained largely by the existing laws and regulations. The UK Company Act 1985 (Section 89), and the Listing Rules of the LSE (Clauses 9.18 and 14.8) make it obligatory for firms in the UK wishing to issue additional equity for cash to first offer them to the existing shareholders in proportion to their existing holdings unless the existing shareholders permit otherwise (the pre-emption right). Additional guidelines set by Investors Protection Committees of the Association of British Insurers and the National Association of Pension Funds, limit placings to 5% of the existing share capital in any one-year and 7.5% in any three years. These guidelines are not legally binding but according to Suzuki (2000) they are well observed in the UK.

In the post-deregulation (post-1986) period, firms can use alternative methods as long as an appropriate resolution is passed by the shareholders. For example, a placing (a “firm placing”) is used to distribute a large block of shares to new shareholders on a non-*pro rata basis*. This implies that a placing violates the pre-emption rights of existing shareholders. Management must, therefore,

obtain an approval at an extraordinary meeting (EGM), through a special resolution by more than 75 percent of the shareholders, unless the value of the shares to be placed constitutes less than 5 percent of the outstanding share capital of the issuing firm and if the issue is within the authorised equity capital. This condition is potentially the reason why when a placing is used, it is commonly combined with an open offer (hence the rising popularity of “placing and open offers” in the late 1990s). In this case, the new shares are first offered to the existing shareholders on a *pro rata* basis and the places receive shares that are not taken up by the shareholders. This is referred to as a “a placing with clawback”. An open offer is similar to a rights issue because the new shares are also distributed to the existing shareholder on *pro rata* basis. The main difference, however, is that the rights in an open offer cannot be traded.

The contents of the issuing documentation is another important feature of the UK institutional setting (Suzuki, 2000). When a firm in the UK plan a new issue of shares, it must produce listing particulars (or prospectus) which must be submitted to and approved by the LSE. If the offer is in connection to a merger, division of a company, a takeover, acquisition of an undertaking and so forth, the details of the consideration and other supporting information must also be produced and satisfy the LSE. In short, the documents published on the date of announcement contain information about the use of proceeds from the issue.

It is interesting to compare this setting with the US setting. The main reason is that most of the theoretical and empirical research on equity offerings, especially on the long-term phenomenon, has focused on the US firms despite of the size and the position of the UK market as one of the largest financial markets. A comparison of the two markets will help to put the findings of this study in a perspective.

First, while in the UK most further issues are still made via rights issues, evidence shows that rights issue disappeared in the US since the early 1980s (Hansen, 1988, Eckbo and Masulis, 1995), leaving general cash offers, also known as firm commitment offers, dominant. In a general cash offer, the new shares are offered to both existing and new investors with no pre-emption rights requirements. This implies that the long-term performance evidence is biased

towards general cash offers and the more there is research on the same subject based on rights issues the better for our understanding of the post-SEO underperformance phenomenon. Even the comparison of evidence on rights issues between UK and US needs to be treated with care because the US rights issues were slightly different. For example, unlike the UK rights issues, the secondary market for rights in the US was said to be sporadic (Hansen, 1986; 1988) and a mechanism for compensating shareholders who did not exercise or sell their rights was lacking. The shares existing shareholders did not take up at the end of the subscription period devolved upon the underwriter at the exercise price. In a way, it did matter whether or not the existing shareholders exercised their rights; it does not matter in the UK. Internationally, rights issues are also becoming rare in Japan (Suzuki, 2000), but are becoming more popular in the European and other developing markets.

Secondly, a rights issue in the UK context offers two benefits: (i) a rights issue leads to low adverse selection problem, and (ii) a rights issue leads to insignificant change in ownership structure, in which case the control of the firm by the existing shareholders is maintained. This has at least two important implications. The first implication is that the overvaluation exploitation argument as a reason for severe negative price reaction (short and long) to the issue announcement will be more relevant to general cash offers than to rights issues. This further implies that the observed underperformance following rights issues could have explanations other than being due to managers exploiting misvaluations of their firm's shares. The second implication is related to how ownership structure in the issuing firms will possibly affect the post-offering performance. Evidence is available that UK institutions own more of the listed firms and enjoy less restrictive regulatory environment (investment and intervention regulations) than their US counterparts do (Black, 1990; Roe, 1991; Short and Keasey, 1997, 1999; Faccio and Lasfer, 2000). Following the UK rights issues features, it means that institutions in the UK have more control over the issuing process. Motivated by their investment stake in the issuing firms as well as their resource and expertise, they will have incentives to monitor managers effectively. The issuing firms' performance is thus likely to be influenced by such institutions. Following the growing governance literature,

that links ownership and firm performance (see, for example, Jensen and Meckling, 1976; Ang *et al.*, 2000), it would be interesting to look at both managerial and institutional share ownership around the offerings and how this might influence long-term performance.

Thirdly, funds from equity issues are normally used to fund long-term projects with long-term cash flow consequences. Shareholders might be concerned with the use to which management commit the raised funds. The availability of information regarding the intended use of the issue proceeds allows an investigation of post-offering performance according to fund uses. The funds from the issue may also create the free cash flow problem (Jensen, 1986). Depending on the ownership structure in the issuing firms, agency problems may arise from the potential divergence of managerial interests from those of the shareholder.

Despite of the differences between the UK and the US corporate environments, the two markets share some fundamental similarities (Black and Coffee, 1994; Franks and Mayer, 1997), in terms of corporate legal environment, corporate ownership, market liquidity level, and in terms of the type of major market players. Each market has a well-developed equity market that fosters trading, monitors managerial activities, facilitates access to external financing, and encourages corporate control activities (Slovin *et al.*, 2000). The similarities as well as the differences between the two markets make the UK a good market for studying and expanding knowledge about different issues regarding SEOs that have been well documented for the US firms.

1.3 An Overview of the Problem and Motivation

When a company with shares already trading on the exchange needs additional funding, it can choose from three main sources, namely: the internally generated funds (earnings and depreciation), debt, and equity issuances. The pecking order hypothesis (Myers, 1984; Myers and Majluf, 1984) suggests that firms prefer the use of internally generated fund, but when these are insufficient, they opt to issue debt securities. They will only issue equity securities as the last resort. For decades now, the existing evidence shows that, consistent with the prediction of the pecking order hypothesis, internally

generated funds have been the main source of funding followed by debt and finally equity (Eckbo and Masulis, 1995).

Public companies making further issues of debt and equity can do so either by offering them to investors at large (general cash offers) or by offering them to the existing shareholders (rights issue). The issuance of equity shares by a publicly listed company is referred to as seasoned equity offerings (hereinafter SEOs). In the US, for example, almost 99% of the equity offerings are made through firm commitment offers. In the UK, Europe, and in many developing market, rights issues are predominant. For example, prior to 1986, almost all equity offerings in the UK were made via rights issues even though some form of deregulations had taken place in 1975 to allow some issues to be made via placings. In the post-1986 deregulation period, rights issues continued to dominate despite of the significant decline in their usage in the 1990s. See Section 2.6 for further details. Given the size of the UK security market, the domination of rights issues makes it the best alternative market for analysing various concerns related to equity issuing activities, most certainly the best for examining concerns related to rights issues.

Over decades, researchers who examined the wealth effects of equity offerings found evidence that indicates that the announcement of the issues are associated with a decline in the share price to the tune of 3%, on average. See for example, the survey papers by Smith (1986), generally on security offer announcements, and Eckbo, and Masulis (1995), particularly on seasoned equity offering announcements. The fall in price may seem small but research shows that it eats up, on average, a third of the money raised by the issue.

Several explanations have been developed. For example, one argument is that share price is simply depressed by the prospect of the additional supply of shares in the market. This explanation has so far lacked credibility, as there is no sufficient evidence that suggests that the price of shares decreases with the size of the issue. Alternatively, other explanations have been proposed, e.g., the information asymmetry theory of Myers and Majluf (1984). Value maximizing managers have incentive to issue new equity only when they believe the shares are overvalued because that is the only time they can create value for the existing shareholders cheaply (at the expense of the new investors). Issuing

process involves publishing detailed information, which may also alert competitors. As long as the overvaluation belief stands, managers might be prepared to issue stock even if the new cash was to be deposited in a bank or invested in short-term securities. Otherwise, they are likely to opt to scale down or delay expansion if they believe the shares are undervalued and equity finance is the only source available, until the price recovers. Since investors are aware of these facts, when the issue is announced, they mark down the price of the stock. Thus, the decline in the share price at the time of the issue announcement may have nothing to do with the increased supply of shares but with information that the issue announcement provides.

Another alternative explanation is based on the potential problems associated with the free excess cash. A new equity issue potentially increases excess cash at the disposal of the management. In some cases, managers may decide to raise more equity capital than the amount required. Unless the use of fund is made public, investors would revise the share price downwards to reflect their assessment of the potential problems that would be associated with the increased amount of free cash flows. That is, managers with too much cash at their disposal might use it for non-value maximising activities.

In recent years the finance literature has witnessed a growing body of evidence indicating long-run underperformance of companies that issue new shares, implying that investors who bought these companies' shares after the share issue earned lower return than they would have if they had bought shares of similar nonissuing companies. A lengthy debate has been put up as to the implication of this evidence for market efficiency. That is, it would mean that investors failed to appreciate fully the issuing companies' information advantage.

The traditional finance theory would suggest that the search for post-offering performance relative to comparable firms is fruitless because all firms with comparable risk should earn the same excess returns. There is however, a growing body of evidence, from IPOs, SEOs, other security offers, mergers and acquisitions, share repurchases, as well as strategic decision events (e.g. spin-offs, etc), that shows that firms which undergo a significant financial or structural change experience significant abnormal returns for up to five years

after the event. Chapter 3 provides a discussion of such evidence from firms involved in SEOs.

This study is motivated mainly by the early explanations of the subsequent SEOs underperformance. The main explanation so far in the US studies (see, for example, Loughran and Ritter (1995), and Spiess and Affleck-Graves (1995)), is that the long-run underperformance following SEOs is due to the information asymmetry that exists between firm management and investors. The firm's management, using its private information, successfully times the new issues to coincide with periods when prospective investors are currently overpaying or are willing to overpay, the main purpose being to create value for the existing shareholders at the expense of the prospective investors. The announcement alerts prospective investors of their valuation errors who respond by revising the price downwards. It is further suggested that the equity issue signal is not fully revealing and that as more information on the issue is revealed, prospective investors continue with revaluation, causing the underperformance. However, the overvaluation exploitation is hardly a plausible explanation in the case of rights issues, because in a rights issue the new shares are distributed *pro rata* to the existing shareholders. This, therefore, raised the question as to whether there is underperformance following equity rights issues, and if so, what factors can explain it.

Further motivation comes from the alternative explanation for underperformance. Following the Jensen's (1986) free cash flow problem, underperformance of SEOs may be a reflection of shareholders' concerns about the fate of the funds so raised. Worried that managers may use the funds on unprofitable undertakings, they revise the share prices downwards. In this explanation, it is the funds and not who receives the new shares that matters. The study is also motivated by the concerns in the previous literature (Fama, 1998; Fama and French, 1998), in which it was argued that the understanding of the long-run abnormal returns would benefit not only from a change of methodology but also from evidence from other financial market. The UK institutional setting, the differences and the similarity between the two markets as highlighted in Section 1.2, contributed to the motivation for analysing UK

equity rights issues to find out whether issuers experience a similar post-offering performance.

1.4 Objectives of the Study

This study will examine the long-run share performance of the UK firms that conducted equity rights issues on the LSE during the 1986-1995 with the following objectives:

The first objective of this thesis is to evaluate the long-run share performance of UK equity rights issuing firms in order to investigate whether these firms generate significant abnormal returns for investors five years after the issue. In particular, it will evaluate the average buy-and-hold returns on the shares of the equity rights issuing firms relative to the average buy-and-hold return on the shares of non-issuing firms chosen by pre-issue market capitalisation, pre-issue market capitalisation and industry, and pre-issue market capitalisation and market-to-book ratios. Both the event firm's buy-and-hold returns and the expected buy-and-hold returns will be measured from the last day of the issuing month up to the event firm's delisting date or its T-year anniversary. The magnitude and the pattern of the average abnormal returns of the rights issuing firms can reveal valuable insights about how investors perceive rights issues and how these perceptions adjust over time.

The second objective of this thesis is to analyse the patterns of the long-run average buy-and-hold abnormal returns. This will be conducted by partitioning the abnormal return patterns by various issue characteristics (issue size, issue frequency, issue purpose, issue volume and year of offering), and firm characteristics (firm size, firms' age since IPO date, market-to-book ratio and industry). Since the results are based on average returns, it is possible that some of the firms significantly outperform and others significantly underperform the benchmarks used. While the analysis of similar factors has been conducted elsewhere (see for example, Loughran and Ritter (1995), Spiess and Affleck-Graves (1995), Cai (1998), Cai and Loughran (1998), etc), it has not been done in the previous UK studies. See, for example, Marsh (1979), Levis (1979), Michailides (2000), and Abhyankar and Ho (2001). The importance of this objective is that knowing which factors may lead to underperformance and

which factor may lead to outperformance is useful to investors in formulating their investment strategies. Analysts and researcher will also find this information useful is refining the performance evaluation strategies.

The third objective is to investigate whether the post-offering level of corporate directors' shareholdings in the UK equity rights issuing firms and their changes from the pre-offering level can explain the observed long-run abnormal returns. The level of managerial share ownership in any firm is important because owner managers are characterised by goal congruence. However, there is also a possibility that, given the proportion of company's equity owned by these owner managers, managerial share ownership could lead to entrenchment, in which such owner managers will indulge in value-destroying rather than value creating activities. Research shows that at lower and higher levels of managerial ownership, the potential conflict of interests between managers and shareholders is minimised leading to significant improvements in firm performance. Over the middle range of ownership, managers become entrenched and they may not pursue shareholders interests. Instead, they may spend firm's resources on perquisite consumption, empire building and so on. Such activities are not consistent with the interests of the shareholders. Equity issues are perfect ways in which excess cash can be made available to managers. From the theoretical predictions (Jensen and Meckling, 1976; Jensen, 1983; Morck *et al.*, 1988; Ang, *et al.*, 2000), entrenched managers are more likely to spend such cash on value-destroying activities. To achieve this objective, the analysis will involve partitioning the average buy-and-hold abnormal returns based on quartiles of the levels of post-offering managerial share ownership as well as quartiles of their changes from the levels prior to the offering. Then the average buy-and-hold abnormal returns will be compared between the lowest and the highest quartiles.

The fourth objective is to investigate whether the post-offering level of institutional share ownership (ISO) and the change in their holdings in the issuing firms from the pre-offering level can explain the observed underperformance. Because of their objectives, the size of their investment in the firms' equity, their expertise, and resources, it has been suggested that institutional investors have greater incentives and ability to monitor the firms

in which they invest. Most of the cash raised through the issue is used to finance long-term projects, which in turn, will affect the issuing company's long-term earnings rather than the current year earnings (Brous and Kini, 1994). The proceeds from the equity issue may also avail more discretionary cash to managers, increasing their likelihood of a non-value maximising behaviour (Jensen, 1986). It follows that since institutions' performance depends partly on performance of their investment in the issuing firms, they have greater incentives to protect these investments in the firm's equity by carefully monitoring the use of the proceeds from the equity issue to ensure that the capital is used for productive purposes. Therefore, the issuing firms' stock performance is likely to be influenced by the proportion of equity owned by institutional shareholders. The buy-and-hold abnormal returns are disaggregated into quartiles based on the levels of post-offering institutional shareholding and their changes around the offering, and compared between the quartiles of the highest (largest) and the lowest (smallest) level of (change) in the proportion of institutional shareholding.

If institutional investors can monitor firms' usage of the funds raised through equity issues then the companies' long-term earnings should improve. Given the linkage between earnings and returns, the institutions' efforts will affect the long-term stock performance. For example, Cai (1998) argues that if institutions are more informed and therefore effective monitors of firms, then the long-run buy-and-hold abnormal returns should be higher for issuing firms with higher percentage of institutional ownership.

The examination of institutional shareholding in the UK is of particular interest because it is a market where institutions' involvement is considered significantly higher, and that these institutions enjoy less restrictive environment, than in the US where most of the research effort has been directed (Short and Keasey, 1997, 1999; Faccio and Laisfer, 2000). Even pension funds, the leading institutional investors in the UK, invest much higher proportion of their resources in company equities. One would therefore expect the UK environment to influence the degree of institutions' involvement in monitoring management and such involvement to enhance their contribution to the value of the firm. The position of the UK market as one of the world's largest financial

markets makes the investigation of the impact of institutional ownership equally important. Furthermore, the Cadbury committee (Cadbury, 1992) insists on the responsibilities of institutional investors in bringing about changes in the underperforming firms rather than selling of their shares. The report seems to reflect the general beliefs of businesses in the UK that institutional shareholders have a role to play in adding value to firms.

1.5 Expected Contributions, Scope of the Study and Research Strategy

Finding evidence of significant long-run abnormal returns following rights issues in the UK indicates that the abnormal performance following SEO is neither a general public offering nor a market-specific phenomenon. Specifically, the overvaluation exploitation, as the main explanation for the underperformance, is not consistent with rights issue characteristics. Finding significant abnormal returns in rights issues, even after addressing a number of methodological and tests statistics concerns, not only adds to the growing evidence on the anomaly but it also sets out the need to search for other equally plausible explanations. It is acknowledged here that this study is not the first to examine the magnitude of long-run underperformance following SEOs in the UK or of rights issues. Therefore, this study contributes on incremental basis, to the existing evidence on long-run performance following equity offering in general, but in particular on the long-run performance of equity rights issues in the UK.

Using (i) a sample of equity rights issues only, (ii) a conservative matching to determine control firms, (iii) post-1986 deregulation sample, (iv) control firms' return rather than their portfolio, the thesis provides evidence of significant underperformance over five-year period after the issue. Except for Michailides (2000), other studies provide evidence on shorter windows between 12 and 36 months after the issue. See, for example, Marsh (1979), Levis (1995), Abhyankar and Ho (2001). Levis' sample is limited to 158 IPOs reissuing within the five-year period after going public as well as to the market indices as a measure of the expected return except for the size decile portfolios. Michailides' sample period is the longest so far but the investigation focuses of the timing of the issues; the sample in this study concentrates on equity rights issues.

In all previous studies investigating long-run underperformance following rights issues in the UK, none of them examined the cross-section characteristics of the issue or of the issuing firms. Fama (1998) and others argue that the underperformance in the equity offering firms may not be related to the act of issuing equity per se, but to cross-sectional relations between characteristics of SEOs such as their low market-to-book ratios, high past returns and so on. It is likely that some issuers outperform or underperform in different groups of firms. Consequently, this study also reports evidence of underperformance based on cross-sectional average buy-and-hold abnormal returns. Finding evidence of differences in average buy-and-hold abnormal returns across cross-sectional characteristics would have a number of interpretations. For example, the SEOs may appear to perform poorly because they are not evaluated against the correct benchmark or the SEOs' underperformance may be due to the differing issue and firms characteristics (Jegadeesh, 2000). This study is the first to provide evidence of cross-sectional patterns in the abnormal performance following equity rights issues in the UK.

Numerous studies provide evidence associating ownership structure and firm performance. Some of these studies focus on the ownership structure around corporate events and its effects on the impact of these events on the wealth of shareholders events. This study provides provide evidence based on the levels of both managerial and institutional share ownership and their changes around the rights offerings.

It is hoped that the findings in this thesis will add significant knowledge to the understanding of long-run abnormal returns of equity rights issuing firms, and point out more areas of significant future contribution.

The scope of this study is limited to the re-examination of the long-run performance, the cross-sectional patterns in the abnormal performance and the ownership structure around the offering. However, a number of studies have investigated various hypotheses suggested in the literature as potential explanations for the observed underperformance. Such hypotheses include the overvaluation exploitation, underreaction, insider trading, earnings management, investors' optimism, etc. These are left out for further research. Because of the link between firm earnings and stock returns, it would also be

interesting to investigate the operating performance of the UK equity rights issuing firms.

As a strategy, the rights issues sample is confined to the issuers of equity rights issues in which rights to subscribe to the ordinary shares are issued to existing holders of ordinary shares only. To capture the long-run performance of equity offerings alone, the sampling is also subjected to additional scrutiny, picking rights issues that were not bundled with other securities, other equity offering methods, or were not distributed to multi security holders. To measure abnormal returns the thesis adopts the buy-and-hold abnormal returns (BHARs) model rather than the classic event study model (CARs). The difference between the two models and the advantages of using BHARs approach over the CARs model are discussed later in Chapter 4. Implementing the model a more conservative approach is applied in defining the non-issuing firms by focussing at firms that did not issue any equity via rights issues or otherwise. The benchmarks of expected returns chosen are those that will allow a comparison of our results with those reported in other markets using similar benchmark specifications.

1.6 Organisation of the Thesis

The remaining part of the thesis is organised as follows: Chapter 2 provides an overview of seasoned equity offerings (SEOs). It starts by highlighting the multi-stage financing decision, sources of long-term financing and the choices among them. It similarly describes the different equity offering methods available to firm managers and the choices among them, before concentrating on the rights issues, the method of interest in this thesis. It further provides a summary of previous articles providing evidence of the shareholders' wealth effects of rights issue announcements both in the UK and internationally as well as outlining the most commonly discussed explanations for the share price decreases.

Chapter 3 provides a summary of the previous articles reporting evidence of long-run performance following seasoned equity offerings. Unlike in the general public offers, e.g., the US's firm commitment offers in which the new shares are offered to the public, old shareholders included, in a rights issue, the

new shares are distributed to the existing shareholders on a *pro rata* basis. Consequently, the evidence is discussed separately. The chapter then describes the most commonly used explanations for the long-run underperformance. Where possible some of the direct evidence on the hypotheses is highlighted.

Chapter 4 provides a description of the data sources. In addition, it discusses the methodologies for assessing long-run stock performance covering the models of abnormal returns, the measures of expected returns and the statistical tests used in assessing the significance of abnormal returns.

Chapter 5 examines the long-run performance following UK equity rights issues in which ordinary shares are issued to holders of ordinary shares on *pro rata* basis. It also examines the trend in the average buy-and-hold abnormal returns over the first 12-month period to find out when the underperformance really started.

Chapter 6 examines the buy-and-hold abnormal return by partitioning them according to various issue, and firms' characteristics. The main objective of this chapter is to examine whether issue characteristics such as issue size, issue frequency, issue purpose, issue volume and year of offering, and firms' characteristics such as firm size, market-to-book ratios, age since IPO, and industry, may help to explain why some of the issuers underperform more than others do.

Chapter 7 examines whether the post-offering levels of managerial share ownership in the issuing firms, and their changes from the year before the offering, may help to explain the observed buy-and-hold abnormal returns. Prior to the analysis, the chapter provides a summary of the literature showing the link between managerial share ownership and firm performance in general, and equity issues in particular; theory as well as empirical evidence.

Similarly, Chapter 8 examines whether the post-offering levels of institutional share ownership in the issuing firms, and their changes from the year before the offering, may help to explain the observed buy-and-hold abnormal returns. The chapter also described the nature and level of institutional investors' involvement in the UK as opposed to other market specifically the US. As in the managerial ownership chapter, this chapter also

discusses the literature linking institutional share ownership and firm performance in general and SEOs in particular: theory as well as empirical evidence.

Finally, Chapter 9 provides a summary of the key findings of the study and draws conclusions in line with the objectives outlined in this chapter. In addition, the chapter discusses some important implications of the findings and highlights some potential areas of further research.

CHAPTER TWO

AN OVERVIEW OF SEASONED EQUITY OFFERINGS (SEOs)

2.1 Introduction

When firms with shares already trading at the exchange require additional long-term capital, more than the current and future internally generated funds can provide, they choose between debt and equity securities issuance. If an equity issuance is chosen, a further decision on how to issue must be made. Within an equity issuance method, a further decision may be required. For example, the decision whether or not to underwrite a rights issue. The news that a firm is planning to issue new equity is in most cases bad news to the market, leading to a fall in the issuer's share price. This chapter provides a general overview of this multi-stage financing decision that a firm takes. Thereafter, it focuses more on equity offering methods in the UK, out of which it concentrates on rights issues; the most commonly used offering method in the UK and the rest of Europe. Moreover, the chapter also provides a summary of the previous evidence on the shareholders' wealth effects of rights issue announcements and a number of the most commonly used explanations for the announcement period price decreases.

The rest of the chapter is organised as follows: Section 2.2 describes the financing choices, whereas the equity offering methods and the choice among them are discussed in Sections 2.3 and 2.4, respectively. Section 2.5 is dedicated to the mechanics of rights offering while Section 2.6 outlines the trends in seasoned equity offerings in the UK. Section 2.7 offers a summary of previous empirical evidence on the wealth effects of rights issues, both in the UK and internationally. Section 2.8 provides a brief summary of the most commonly cited explanations for the announcement period price decreases. Lastly, Section 2.9 provides a summary and conclusions of the chapter.

2.2 Long-term Financing

The choice of financing sources is one of the important decisions a company that needs additional financing takes. Figure 2.1 shows three main choices: internally generated funds, debt security issuance and an equity security issuance. The ‘pecking order’ approach to financing decisions (Myers, 1984; Myers and Majluf, 1984) suggests that firms will first rely on internally generated funds (retained earnings and depreciation) to finance growth. If firms need more funds than the current and future retained earnings can provide, they will turn to issuing debt securities; they will only consider equity security issuance as a last resort.

How do firms choose between debt and equity securities issuance? Marsh (1982) summarises several considerations, from a number of other studies, which firms may take into account in arriving at the decision. Such considerations include: (1) the difference between the firm’s current and target debt ratio, (2) the tax advantages of debt, (3) expected costs of bankruptcy and/or of financial distress, (4) floatation costs, (5) assets maturity matching, (6) company size, (7) short term market conditions, and (8) the recent history of security prices. In addition to developing the debt–equity choice model, Marsh (1982) uses securities issues by UK firms between 1959 and 1974 and provides empirical evidence, that market conditions and historical security prices heavily influence the company’s choice between debt and equity issuance. In addition, companies behave as if they have a target level of debt in mind. When the choice is made, say for example, an equity issue, a further choice has to be made from among various issuing methods. These are considered later Section 2.3.

In well-developed capital markets, e.g. the US and UK markets, where liquidity is not much of a problem, raising capital externally is thought to be relatively easier. However, the existing evidence shows that retained earnings have been the most dominant funding source in the US, followed by debt security issuance, since the World War I (Eckbo and Masulis, 1995).⁴ The same could be said for the UK market. This suggests that, in general, firms are

⁴ Pinegar and Wilbricht (1989) provide additional evidence from a questionnaire survey of Fortune 500 firms in 1986, from which they conclude that managerial responses are consistent with the broad predictions of pecking order theory.

reluctant to issue new shares. The finance literature provides several reasons for such a tendency.

Firstly, a new issue will drive down the price of the company's shares, which in turn would allow new shareholders to acquire the shares being issued at a discount to their true value. A discount, especially a deep discount, is a cost to the old shareholders. It follows that, for a given amount of money to be raised, more shares must be issued. This increases the number of shares outstanding, which in turn lowers the expected future dividends per share assuming that the firms' expected earning power is unchanged. The existing shareholders will bear this cost even if the market subsequently recovers from the effects of misvaluation and the share price rises.

Secondly, firms may refrain from issuing equity to avoid the risk of being classified by the market as overvalued firms whereby, as the market redresses the misvaluation, their share prices fall. This is rational if it is assumed that managers are better informed than are outside investors about the true value of the firms' assets and if the decision to issue equity is interpreted by the market as evidence of management's view that the company's shares are currently overvalued. The market makes such an assumption because managers who believe that the current share price understates its true value will be most reluctant to issue additional shares at what they perceive to be unfair prices. Such managers will prefer other sources of financing such as debt and if possible forego some of the profitable opportunities to issuing new equity. For instance, a firm that has exhausted its borrowing limits would rather forego a profitable investment opportunity than incur the cost of issuing shares at a price lower than their true value. Such a decision, however, will depend on, among other things, the extent of the current undervaluation, the level of the funding required, and the profitability (net present value) of the investment to be undertaken.

Thirdly, overvaluation of shares may sometimes induce management to issue new shares, even in the absence of immediate profitable projects to make a good use of the funds. For such an opportunistic behaviour the market may penalise the firms because of the perceived free cash flow problem (see, Jensen, 1986), in which there is an increased likelihood that managers will invest the

money in value-destroying projects. In principle, however, the company's existing shareholders will benefit at the expense of the new shareholders in that the funds may be invested in financial assets pending new projects, and it gives the firm flexibility as well as competitive edge in case of acquisitions. Depending on whether the benefits from short-term investments will outweigh the market's free cash flow-related penalty, they may prefer not to issue new shares.

Therefore, if firm managers are acting in the best interest of the shareholders they will issue new shares only if the shares are overvalued by the market or if the payoff from the intended project is large in relation to any current undervaluation of the firms' shares and the firm has exhausted its debt capacity. When an issue is announced, the market will recognise the firm's issue decision as a signal that the shares are overvalued, and therefore, mark their prices down (Myers and Majluf, 1984). Even a firm with correctly valued shares will be treated the same way if it announces a new issue. Alternatively, the market may recognise the issue announcement as a signal that the firms has more profitable opportunities than can be financed by internally generated funds. In this case, an announcement of an equity issue will be associated with a positive effect (Cooney and Kalay, 1993).

The Myers and Majluf's (1984) model, however, assumes that the new shares are issued to new shareholders. In a rights issue the new shares are issued *pro rata* to the existing shareholders. To the extent that the existing shareholders subscribe to their allotments, an equity issue may be seen by the market as a signal of the issuing firm having profitable opportunities and it is raising fund required to finance them. The overvaluation explanation has been cited as one of the major reasons for both the announcement period abnormal returns and the long-run abnormal returns following equity issue decisions. The allocation of new shares to existing shareholders together with the fact that the negative effects of issue discounts are compensated by the value of the rights, suggest that rights issues should be associated with less or non-negative announcement period abnormal returns. A summary of the existing evidence on the announcement effects of rights issues is provided in Section 2.7.

2.3 Seasoned Equity Offering Methods

Once a company with shares already trading at the exchange has decided to finance its activities through an issue of new shares (seasoned equity offering-SEOs), it has several choices of offering methods (see Level 2 of Figure 2.1). In the UK, this is commonly referred to as “further equity issues”. In general, firms can choose from firm commitment underwritten offerings, rights issues, placings, open offers, and others. Firm commitment underwritten offerings are most common in the US while the rest are common in the UK, with rights issues also dominating the rest of Europe and other small markets. There is a tendency of markets moving towards the choice of firm commitment underwritten offerings or a method with similar features the more developed they become (Eckbo and Masulis, 1992). The following description of seasoned offering methods benefits from previous works, for example, Armitage (2000a, 2000b), Slovin *et al.* (2000), Suzuki (2000). This section describes the offering methods individually whereas factors determining the choice of one offering method over the other(s) are discussed in Section 2.4.

2.3.1 Firm commitment underwritten offers

In a firm commitment underwritten offering, the issuing company hires an underwriter, e.g. an investment bank, to organize the issue, whereby the underwriter or underwriting syndicate buys the shares from the issuer, and sell them to both new and existing investors. The offering price is set the day before the issue, normally at a level equal or very close to the market price. Most underwriting contracts are negotiated with a particular investment bank rather than being open to competitive bids. The underwriter charges an underwriting fee or spread that covers: (i) the costs of advice (ii) cost of marketing the shares and (iii) the risk of being left with some of the shares, which can only be sold at a loss.

An issue announcement is made about one month before the shares are actually sold, during which period the underwriter conducts book-building activities. The process involves conducting road shows, gathering information about investors’ demand, making informal agreement, and soliciting non-binding indications of investor’s interests. The information gathered is then

used to establish the market conditions and the issuing firm's value (offering price). The issues have to be registered in advance with the Securities and Exchange Commission (SEC) and a prospectus produced. Then the offer price and size are finalized after SEC's approval is obtained, which occurs well after the initial announcement. The ability of an underwriter to conduct book building and to withdraw an offering⁵ lessens the underwriter certification conveyed in the initial announcement. The firm commitment underwritten offer is now the most common offering method in the US.⁶ Shelf registration was allowed since 1982, in which a single statement filed with the SEC covers subsequent issues for up to two years. This allows shares to be sold to the investment bank at the same time as they are announced, in which case there is no gap between announcement and issue date.

2.3.2 Rights issues

A rights issue is an offer to the existing holders of the company's securities, providing them with a right to subscribe or purchase further securities in proportion to their existing holdings, at a specified exercise price until a designated expiration date. That is, the existing shareholders are given the right of first refusal, a principle referred to as the pre-emptive right.⁷ A

⁵ Occasionally equity issue announcements are withdrawn before being effected, although such cases are not many. Mikkelson and Partch (1986, 1988), for example, report that only 10% of seasoned equity offerings in the U.S. were withdrawn between 1974 and 1983.

⁶ There is also 'best effort' or 'non-underwritten' offerings contracts, but according to Kumar and Tsetsekos (1993), this type accounts for only 2% of the offerings. Rights issues were common in the pre-1980s but they have disappeared almost completely since the early 1980s (Eckbo and Masulis, 1995; Hansen, 1988). Eckbo and Masulis (1995), for example, show that by 1980, 99% of the SEOs in the US were made through underwritten firm-commitment offerings. A shift from uninsured to insured rights offerings, and finally, to underwritten firm-commitment offerings has been observed in Japan (Hanaeda, 1993). Eckbo and Masulis (1992) show that as the market develops there is a tendency of firms to move from uninsured to insured rights issues and eventually to firm commitment offering or offering method of similar features.

⁷ The pre-emptive right has long been a tradition in the UK and has been enshrined in law since 1977 (see for example, the European Community's (EU) Second Council Directive on Company Law, 1976 (Article 29) and UK Company Act, 1985 (Sections 89-96)). The essence of the pre-emption rights is that a company may not allot equity securities for cash to any person unless the same or a better offer has been made to all holders of relevant shares on a *pro rata* basis (see for example, the LSE Listing Rules Clauses 9.18 and 14.8). Only to the extent that the securities are not taken up by such persons under the offer may they then be issued for cash to interested investors, existing or otherwise, in a way other than in proportion to their holdings. In this way, a rights

rights issue is made to the existing shareholders through renounceable letters, referred to as provisional allotment letters (PALs), or other negotiable document, which may be traded as 'nil paid' rights for a period before payment is due. Like any other equity offering, a rights issue can be carried out for a variety of reasons including; taking advantage of strong market conditions, financing development projects, acquisitions or simply building a war chest for future acquisitions, reducing gearing, or rebuilding a balance sheet after losses. Most rights issues, nowadays, are standby underwritten or insured but in the past, uninsured rights were equally likely. Since a large part of this chapter will focus on rights issues, more features including the underwriting arrangements and announcement effects on the shareholders' wealth will be discussed later in Sections 2.5 and 2.7.

2.3.3 Placings

Placing is a non-rights method of offering in which an underwriter acquires the new shares directly from an issuing firm on the spot at a fixed price, and then sells them to clients, typically institutions, and other outside investors primarily without commission. To effect a placing without violating the pre-emption requirement an extraordinary general meeting (EGM) must pass a special resolution, normally at more than 75% of shareholders except where the proceeds amount to less than 5% of the issuer's outstanding shares, and as long as the amount is within the authorised capital. The guidelines (not legally binding) set by the Investors Protection Committee of the Association of British Insurers and the National Association of Pension Funds limit firm placing to 5% of the existing share capital in any one year and to 7.5% in any three years.⁸ A placing is priced and contracted for simultaneously, and the offer price and size are set at the initial announcement, with the contract signed the night before the announcement. As a result, the issued shares are the

issue protects the existing shareholders' stake from being diluted unless they sell their rights.

⁸ Suzuki (2000) points out that although the guidelines are not legally binding, they are well observed in the UK, practically making it difficult for firms to use firm placings beyond these guidelines. Because of these regulations and guidelines, it is more common to find firms combining placing and open offers in which shares are offered to existing shareholders on *pro rata* basis and placeses receive shares that are not taken up by the existing shareholders, i.e., a placing with "clawback" provisions.

responsibility of the underwriter. The underwriter is responsible for making the contracted funds available to the issuing firm, net of the underwriting fees, at the initial announcement. The success of a placing usually depends on the placing power of the issuer's stockbroker. The underwriter has no definitive information about the market's response to news of the offering, cannot subsequently alter the proceeds to the issuing firm, and cannot cancel the offering.

Consequently, the issuing firm is guaranteed of the funds at a definite price and time, making placing a rapid and sure way through which a firm can access funds compared to rights issues. However, the underwriter is exposed to risk from subsequent adverse share price changes. To guard against this risk, investment banks in the U.K. periodically take informal soundings about the portfolio preferences and cash positions of their clients. This information facilitates the decision about whether to underwrite an offering and about what offer price to set. The underwriter's reputation and effectiveness in establishing the offer price and issue size that permit the offering to be sold at a profit are related to its ability to maintain channels through which it can gather relevant information.

Clients expect to access placed shares at a favourable price, and they will be reluctant to participate in the offering if they believe shares will be cheaper in the after-market period. Since a typical underwriter has considerable reputation and financial capital at risk, it is highly unlikely that this underwriter would underwrite a placing unless the same is confident that the offering will be successful. High-quality firms have incentives to adopt the placing method of offering to mitigate the adverse selection problem intrinsic to seasoned equity issuance. Placings can be used either as a means of floating a company or of raising additional capital for a listed company. Placings also allow the directors of a company to influence the selection of shareholders. The evidence in the UK so far shows that placings lead to significant positive two-day announcement period abnormal returns (Slovin *et al.*, 2000).

2.3.4 Open offers.

In an open offer, the new shares are placed with investors on or shortly before the announcement day, but the shares are also offered *pro rata* to existing shareholders, who have priority. Consequently, open offers are similar to rights issues except that; (i) the rights cannot be sold, (ii) the new shares are usually placed with investing institutions subject to 'clawback' to satisfy demand from existing shareholders entitled to the new shares, and (iii) the new shares are not issued until after the close of the offer. The LSE requires a discount to the offer price in an open offer not exceeding 10% and an offer period less than 25 trading days. If an EGM is required for the open offer, it can be held immediately after the offer period, which avoids having to pay for extra weeks of underwriting, but if an open offer is not approved at the subsequent EGM, the money raised is returned to subscribers.

Since the rights in an open offer cannot be sold, any discount implies a transfer of wealth from non-subscribers and the subscribers are not compensated for the fall in value of their existing shares. The ex-rights day in an open offer is usually the day after the announcement; otherwise, it is the announcement day. Although there is no market for the rights, buyers of the shares before the ex-day are entitled to participate in the open offer, and this entitlement has value if the offer is at a discount. If the offer fails, the investors with whom the shares have been placed (the sub-underwriter in the case of a rights issue) receive all the shares not subscribed for by the existing shareholders. The evidence so far shows that open offers in the UK lead to a positive two-day announcement period abnormal returns (Suzuki, 2000).

2.3.5 Other Methods

Firms making further equity issues in the UK can also choose from other offer methods in addition to the most commonly used methods discussed above. These include; acquisition or merger issues, vendor consideration placing, issues for cash, conversions of securities from one class to another, and exercises of options or warrants to subscribe to securities. Hilton and Sharp (1994:110) provide description of these issues as outlined in the Yellow Book.

2.4 Choice of Equity Issuing Methods

Once the decision to raise additional equity capital is made, the firm's management must choose the offering method: firm commitment underwritten offers, rights issues, placings, or open offers. The decision also extends to the sub-categories within the chosen offering method. For example, firms that chose a rights issue method can in turn choose between uninsured and insured rights issues. See Level 3 of Figure 2.1. In the UK for example, before the "big bang"⁹ in 1986, the problem of choosing an offering method was insignificant because further issues were traditionally made through rights issues. In the post-1986 period however, firms in the UK have had more choices. How do firms choose from among these methods? More particularly, what factors lead to the preference of one method over another, and what might explain, for example, why one method is dominant in one market but not in another? A number of previous studies shed some light on this subject. Factors considered include: (1) firm quality (Heinkel and Schwartz, 1986), (2) market misvaluation, ownership structure and control (Cronqvist and Nilsson, 2001), (3) firm size, ownership structure and the expected level of take-up by existing shareholders (Eckbo and Masulis, 1992), (4) issuing costs (Smith, 1977).

Heinkel and Schwartz (1986) develop an asymmetric information based model of equity offering method choice. The authors show that: (i) high-quality firms employ a standby (or insured) rights issue (ii) intermediate-quality firms distinguish themselves from other firms by using an uninsured rights issue and optimally selecting the subscription price and (iii) low-quality firms prefer firm commitment underwritten offers through an uninformed underwriter to avoid the cost of using a rights issue. The model also predicts that firm commitment underwritten offers should generate the most unfavourable share price reaction amongst all the offering methods. In addition, since insured rights entail underwriter investigation, they should generate the least unfavourable share price reaction among flotation methods. On the discount, the authors also contend that the subscription price is irrelevant because the cost of standby

⁹ "Big bang" refers to the 27th October 1986 when the Stock Exchange implemented major changes in the exchange rules, including abolition of minimum commission, permission of capacity trading, SEAQ introduction and relaxation of the disapplication of the pre-emptive right.

agreements is set in a competitive market. However, a firm that select uninsured rights use subscription price to differentiate quality since the firm will have to absorb the penalty costs if an offering fails. Thus, a lower-quality firm adopts a lower exercise price (greater discount) due to the high probability that unfavourable information will become public after the offer is announced, whereas a firm with unfavourable information adopts a higher exercise price (smaller discount).

Cronqvist and Nilsson (2001) use a similar assumption and explore how market misvaluation influences the choice between rights issues and placing methods. First, the authors' evidence suggests that the potentially undervalued firms (firms with higher degree of asymmetric information) are more likely to choose private placement than rights issues. To the authors, the private placements are being used here to overcome the under-investment problems, or to signal the management's belief that the firm is undervalued. Second, the authors' evidence shows that issuers who choose a rights issue method are more likely to choose an insured rights issue the higher the degree of asymmetric information. In addition, those who choose private placement will choose to issue to existing investors, rather than to new investors, the higher the degree of asymmetric information. Third, since transferability of rights in the secondary market means that managers can determine and control the desired level of dilution, controlling family owners will choose rights offering, and in particular uninsured rights offerings, in order to preserve the firm's control structure. In addition, firms that will gain more from external monitoring will choose a private placement, specifically to a new owner.

Eckbo and Masulis (1992) contend that the asymmetric information between managers and shareholders about the firm's value influences expectations about both the willingness of the existing shareholders to participate in an equity offering and the determination of offering method. Managers expecting lower shareholder participation choose firm commitment offerings and retain underwriters to certify firm quality. If shareholders are effective monitors and cost effective source of financing, then managers of undervalued firms issue uninsured rights, because they expect the offered shares to be fully taken up. Insured rights are selected by firms with an

expected shareholders' take-up greater than the take-up expected by firm that adopt the firm commitment method, but lower than one that would be expected by firms that choose uninsured rights. The model predicts the market reaction to the announcement of equity offering to be more unfavourable for insured than for uninsured rights issue but not as unfavourable as for the firm commitment offerings. For empirical evidence consistent with these predictions, see for example, Bohren *et al.* (1997), Slovin *et al.* (2000).

The authors also posit that firms with concentrated share ownership and higher expected take-up of any issue by existing shareholders are more likely to use a rights issue to raise new equity. Firms switch to firm commitment underwritten offers when the firm is large, share ownership is widely dispersed and when the level of existing shareholders take-up in any rights issue is expected to be low. To these firms, the use of underwritten offer minimises the costs of information asymmetry between managers (issuers) and investors.

Why is one method preferred in one market to another? Classic examples are the US market's preference for firm commitment underwritten offers, and the preference for rights issue in the UK, European and other developing markets. The issuing costs¹⁰, direct and indirect, have been blamed for this preference. For example, the direct costs associated with rights issues are observed to be lower than the direct costs of an underwritten offer (Smith, 1977; Hansen, 1988; Eckbo and Masulis, 1992). However, the existing empirical evidence does not find a good link. For example, Smith (1977) argues that firm commitment underwritten offers may be preferred because the success of the offer is guaranteed, the proceeds of the issue are received sooner, the underwriter provides ongoing consulting advice, and the associated legal and other costs are lower. However, Smith could not find sufficient evidence to suggest that any of these explanations could account for the dominant use of firm underwritten offers in the US. Moreover, Hansen (1988) argues that with a firm commitment, underwriters are able to sell equity to new investors at the prevailing market price without incurring any significant price concessions in the pre-subscription period observed under the rights issues. The use of

¹⁰ Apart from the direct costs, indirect costs include, for example, the significant negative offering period abnormal returns (Singh, 1997) and reduction in the liquidity of the issuing firm's shares (Kothare, 1997).

underwritten offer minimises the costs of information asymmetry between managers (issuers) and investors. A market size based suggestion comes from Eckbo and Masulis (1992), in which the authors suggest that firms switch to firm commitment underwritten offers, the larger their size, when their share ownership is widely dispersed, and when the level of existing shareholders take-up to any rights issue would be low. The authors conclude that their analysis provided possible explanation as to why firms in small capital markets, where share are closely held, continued to rely on rights issues to raise equity capital.

2.5 Mechanics of a Rights Issue

2.5.1 The offering announcement

Any trading company is required to notify the market of any proposed change in its capital structure. Thus, before any information is sent to shareholders the issuing company must make an announcement. It issues a circular, setting out the material terms and conditions of the issue; e.g., the reasons for the rights issue, the detailed terms, conditions and instructions to shareholders for taking up their rights, and the use to which the capital sought will be put. At the same time as the issue is announced, the rights to purchase the new shares are sent to shareholders in nil paid form as provisional allotment letters (PALs), unless an extra-ordinary general meeting (EGM) is required.¹¹ The PALs contain, among other things, details of individual shareholders' holdings and entitlements to the new shares. The number of shares a shareholder must hold to receive each new right depends on the ratio of the number of old shares to the number of new shares outstanding. Moreover, the number of new shares to be issued depends on the amount of capital to be raised and the subscription price set for the new shares.

¹¹The number of shares to be issued may require the approval of the existing shareholders at an EGM, the notice of which is given when the offer is announced. The length of the notice depends on the nature of the resolution but can be between 2 and 3 weeks. The shareholders' approval will be necessary if: (1) the company has insufficient authorized but unissued share capital; (2) the directors have not got the necessary power to allot the shares under section 80 of the Companies Act; (3) the statutory pre-emption rights have to be disapplied; (4) the issue is of a new class of shares; and (5) the issue is to finance an acquisition that requires shareholder approval. A prospectus, which will also be sent to shareholders, must be approved by the Stock Exchange.

2.5.2 The offer price, discount and offer period

The offer price is conventionally set at a discount of between 15% and 20% to the market price the day before the announcement. The main reason for the discount is to reduce the risk of the market price falling below the offer price before the offer closes. Clearly, the new shares will not be bought if the shares are trading on the market at a price below the subscription price over the offer period. For example when the stock market became more volatile in the 1970s and 1980s the size of a typical discount tended to drift upwards. An appropriate price discount will therefore reduce the likelihood of the price falling below the market price giving the existing shareholders an incentive to put up the new money by subscribing to the new shares. The depth of the discount, however, makes no difference to the wealth of shareholders, subscribing or non-subscribing, because the non-subscribing shareholders can sell their rights (Brealey and Myers 2000:425). It is not a cost to the company either. Also, see Section 2.7 and Appendix 2.1 for a detailed analysis.

The offer period begins on the day the offer is formally announced and it must last for a minimum of 3 weeks, on average. However, if an EGM is required to authorise the share issue, the offer period will be at least five weeks, since at least two weeks notice of an EGM must be given and the PALs will not be sent out until immediately after the EGM. During the offer period, the existing shareholders having received the PALs can either exercise or sell their rights to subscribe to the new share. The existing shares go ex-rights on the day after the announcement or after EGM, if one is required. Buyers of the shares on or after the ex-date are not entitled to participate in the issue so that other things equal the market price falls on the ex-date to reflect the script element of the issue.

2.5.3 The value of the rights

The PALs are negotiable instruments; they can be accepted (renounced) in full, or in part. That is, the PALs can be traded in nil or fully paid form, renounced in favour of another shareholder, split, or consolidated, during the offer period. As a result, the rights have value of their own. Eventually, however, the PALs are replaced by share certificates. The existing shareholders

are given up to 21 days to decide whether to take up their allotment. At the end of the subscription period, rights that have value but have neither been exercised nor traded, are sold on the market, by a broker appointed by the issuing firm, and the proceeds credited to the non-exercising shareholders (not to the firm or broker). They can also be sold to existing shareholders who wish to purchase more than their *pro-rata* share of the issue (over allotment option or green shoe). Consequently, the non-subscribing shareholders are compensated for the fall in the price of their shares ex-rights. The notional price of a right is the difference between the ex-rights share price and the offer price (ignoring the rights' time value) and the actual price is kept close to this by the possibility of arbitrage between the shares and the rights. If during the offer period the share price falls below the subscription price, the rights become worthless, the sub-underwriters (if any) will be required to take-up the unsold shares, and the company and its advisers will suffer the embarrassment of a failed issue. This may lead to loss of reputation. This differs with the rights issues in the US in those days as there were no system of compensating non-exercising or non-selling shareholders (Hansen, 1988) and underwriters received a standby fee as well as a take-up fee for each share not taken up by existing shareholders.

2.5.4 Underwriting arrangements

Most rights issues in the UK are underwritten (standby or insured); a few are uninsured. In a standby underwritten rights issue, the underwriter, for a fee, undertakes to purchase any unsubscribed for shares at the expiration date, which normally happens when the market price falls below the subscription price. In an uninsured rights issue there is no standby commitment; the issuer depends on a deeper discount to increase the likelihood of the issue's success. Normally the issuing firm appoints a merchant bank, in most cases its relationship merchant bank or its share broker, to arrange the share issue. The main functions of the underwriter are to advise the company on the issue, to co-ordinate the writing of the prospectus and to act as a sponsor to the issue and as lead underwriter. If the underwriter is a merchant/investment bank, a separate stockbroker is used to find sub-underwriters or placees, with which to share the risk, to liaise with the Stock

Exchange and to advice on the offer price. In some issues, usually by smaller companies, the broker is also the underwriter.

For a typical rights issue a merchant bank, as a lead underwriter might charge 2% commission, which is calculated as a percentage of the full potential underwritten proceeds, to cover for the risk of being left with the unsubscribed shares at the end of the offer period. The lead underwriter, however, passes most of this risk to the issuer's stockbroker and the sub-underwriters for a fee where none of them will take more than 2 to 3 percent of the issue. The sub-underwriters' commission is set 1.25% and is split between an underwriting commission and a commitment commission. The sub-underwriters' commitment commission relates to the first 30 days of the underwriting period. For each subsequent 7-day period or part thereof for which the underwriting period extends, a further 1/8% is charged.

If underwriting is costly, what then motivates most issuers to use underwriters? The timing of the issue is dependent upon the funding requirements of the issuer and the advisers' views on the expected market reaction. Regardless of how attractive an issue may be, there is always a risk that other factors affecting the market could have a significant adverse effect on the success of the issue. Because it is practically impossible to remove this market uncertainty, many companies planning to make rights issue resort to underwriting. The benefits of underwriting to the issuers include:¹² (i) guaranteed funding. (ii) Lower costs than would otherwise be associated with deeper discounts, e.g., the effects deep discounts will have on both the future dividends and earnings per share. When underwriting is used, the discount can then be used to signal firm value. (iii) The profit possibility from being able to sell shares above the prevailing market price should the share price fall. (iv) The possibility of withdrawal should the market react adversely to news, which increases shareholders confidence. On the other hand, a deeper discount is not preferred for several reasons (see Bohren *et al.*, 1997). It may attract capital

¹² Hanaeda (1993) further suggests that the choice of underwritten offering helps to establish a close and long-term relationship with an underwriter, which in the long-run allows firms to obtain comprehensive services regarding the issuance of other securities such as warrants, straight bonds, and equity linked corporate bonds including convertible bonds.

gains tax on unsubscribing shareholders (Smith, 1977). It may also lead to additional transaction cost of reselling rights issues should the one in place prove inadequate (Hansen, 1988), or to wealth transfer to convertible security holders due to antidilution clauses (Eckbo and Masulis, 1992). If management prefers to maintain the level of dividend per share, deep discount might not be feasible without imposing a strain on a company's cash position. The deeper the discount the larger the number of additional shares that have to be issued and the larger the increase in the aggregate dividend payment if the dividend per share is to be maintained. However, it is not clear why management should be interested in maintaining the dividend per share rather than the monetary value of dividend payments.

Given the fact that deeper discount can reduce the need for expensive underwriting, one would question whether issuers get value for money by involving an underwriter. The existing evidence is mixed. For example, Merrett, Howe and Newbould (1967) contend that underwriting serves little economically useful purpose whatsoever and that underwriting charges in the case of rights issues seems somewhat excessive for the minimal risks actually borne by the underwriters. Marsh (1980) finds that underwriting of 671 UK rights issues made over the period 1962-1975 was, on an *ex post* basis, highly profitable. Marsh concludes, however, that it is possible the underwriting fees are used to compensate the merchant bank for other services provided in addition to underwriting, and for which no explicit charge is made. See also Hanaeda's (1993) suggestion in the previous footnote. As a result, it is hard to conclude from the evidence that underwriting is too expensive.

2.6 Equity Issue Trends in the UK

It has been a long-standing tradition for listed companies in the U.K. to raise additional equity capital via rights issues. Even after some changes were made to allow the use of other methods, rights issues were still popular. For example, in January 1975, changes in the LSE rules allowed companies to raise equity via placings, as long as existing shareholders pass a special resolution at an EGM to disapply the pre-emption rights. Even then, over 99% of the new equity issued in the UK in 1975 was raised via rights issue methods (Marsh,

1979: p. 839). Further deregulation in the 1986's "Big Bang" allowed companies more flexibility to use other forms of equity offering.¹³ This meant that firms planning to raise equity capital could choose from a variety of offering methods other than just rights issues. However, rights issues continued to dominate the UK market although their relative usage has been decreasing over time. For example, an inspection of the reported equity offerings for cash in the Quality of Market Review for the calendar year 1994 shows that 49.9% of the equity capital raised was via rights issues followed closely by placings at 41%. Burton *et al.* (2000) reports an average of 40% by rights issues across the years 1995-1996. Levis (1995) also reports that in 1993, 80.06% of the issues were made through rights issues and 14% through placings. The remaining 5% were made through methods other than rights issue and placings.

The changes did not come lightly. On the one hand, the larger corporate issuers and the new conglomerate banking groups saw the rights issue process as lengthy and cumbersome. Consequently, they argue for a change to allow companies more flexibility that would enable them freedom to take advantage of temporary windows of opportunity in the financial markets by issuing shares as and when they see an opening. In addition, they argue that firm management might not always be confident in convincing the market that a rights issue is in the interest of shareholders, without simultaneously damaging these interests. For example, providing the market and shareholders with information about new business opportunities would almost certainly alert competition to these possibilities, and this could lead to lower future profits for shareholders. They thus saw alternative offering methods such as placing, where the new issue is

¹³ Section 95 of the Company Act 1985 allowed for disapplication of the pre-emption right provided for in Section 89 subject to a passing of a special resolution at an EGM. Following the deregulation, it was made possible for such resolutions to be made in advance of the issue (up to a year in advance) at each annual general meeting (AGM), in a rolling fashion, rather than requiring an EGM each time the firm wants to issue new shares. Additional guidelines were put in place, which allowed the existing shareholders to impose certain conditions on the approval. For example, under the Association of British Insurers (ABI) guidelines (issued April 1987) and the National Association of Pension Funds (NAPF) guidelines (issued in May 1987), the authority must be restricted to a 2.5% and 5%, respectively, of the company's total issued equity share capital. NAPF further required that for companies that take advantages of the five percent maximum on an annual basis, a further constraint of 12.5% is to be enforced on a rolling five year basis, and also that the guideline suggested that these restrictions should also apply to all forms of issue providing rights to equity shares, such as convertibles and warrants.

arranged through a merchant bank, as a way in which such information can be disclosed on a confidential basis to the bank without the details being made public. The bank relying on its reputation may be able to assure the market of the need for a new issue without divulging any sensitive information. On the other hand, the big investors - the insurance companies and pension funds argued for a system that gives existing investors the first right to new shares, a view that was also well supported in the stock market's regulations than in the statutory provisions. One example of the arguments was that since investment programmes are not developed overnight and unless a company is attempting to raise cash to mount a bid and there is a possibility of a rival bid occurring, a few weeks delay in starting new projects, which may have gestation periods of some years, hardly seem critical.

As the Stock Exchange feared the loss of business from these influential market operators, it quickly adjusted its rulebook and large institutions had to eventually compromise by allowing companies to make small issues of shares for cash without going through the pre-emption procedure. Under the new market regulations, companies were allowed to get approval for the waiver of pre-emptive rights for a year at a time, where approval required a 75 per cent majority at a general meeting of the shareholders. To provide shareholders with the same degree of protection managements were required to disclose the terms of non-rights issues in the next annual report, regarding the issue and the market price of the share at the time of the issue. In addition, the Stock Exchange gave shareholders the right to impose any conditions, which they thought were appropriate on management, when waiving their pre-emptive rights; e.g. the upper limit on the size of any discount offered to outside investors, or the size of the issue. However, many critics of these changes acknowledge that the changes in the Company Law and Stock Exchange regulations have made it considerably easier for the management of companies to arrange for their shareholders to waive their right to participate in all new issues.

2.7 Wealth Effects of Rights Issues

Both the pre-emptive rights and the transferability of the rights raise questions as to whether a rights issue, the degree of price discount and the actions of the existing shareholders have any effect on their wealth. Theoretically, none of these should affect the wealth of the existing shareholders in a rights issue. However, the empirical evidence so far tells a different story.

Appendix 2.1 uses a hypothetical firm, ABC Holdings, which is contemplating two issue strategies, specifically about the discount. The aim is to show whether the rights issue, the depth of the discount and the actions of the existing shareholders when the issue is announced matter. We can conclude the following: (1) the degree of discount does not lead to wealth effects unless the new issue leads to a reappraisal of the prospects of the firm. This is because what they gain from the opportunity to buy the share at a price lower than the market price they can expect to lose through the fall in the price of the shares they held prior to the new issue. A smaller discount will lead to a smaller fall in share price than a deeper discount but neither would affect the value of the shareholders' wealth. (2) The action of the existing shareholders does not make any difference. If the existing shareholders choose to sell the rights, the value of the right compensates non-subscribing shareholders for the fall in the share price ex-rights. If the existing shareholders choose to do nothing, their rights are sold for them automatically at the end of the offer. Therefore, whatever the shareholder's misgivings about the issue, it does not matter whether the shareholder exercise, sell the rights or do nothing.

Despite the theoretical arguments that rights issues have no wealth effects, the existing empirical evidence provides a different picture, mixed between those indicating positive and those indicating negative two-day announcement period abnormal returns. Table 2.1 presents a summary of some of the previous works, focusing mainly on rights issues, both in the UK and internationally. Similar to public offerings, rights issue clearly appear to be made by firms performing well in relation to the market (Ball *et al.*, 1977; Smith, 1977; Marsh, 1979; Eckbo and Masulis, 1992; Levis, 1995; Marsden, 2000).

While the evidence on the wealth effects of public equity offerings shows a clear significant negative two-day announcement period abnormal return (Smith, 1986; Eckbo and Masulis, 1995), it is mixed for the rights issues. The evidence can be looked at in three different categories: (1) early UK evidence (2) recent UK evidence and (3) international evidence. In general, the early evidence suggests that announcements of rights issue, both UK and internationally, was associated with either insignificant negative or positive two-day abnormal returns (Merrett, *et al.*, 1967; Ball *et al.*, 1977;¹⁴; Smith, 1977; Marsh, 1979). Recent evidence, however, shows that rights issues are associated with significant negative two-day announcement abnormal returns (White and Lusztig, 1980; Eckbo and Masulis, 1992; Muhtaseb, 1994; Levis, 1995; Singh, 1997; Burton *et al.*, 1999, 2000; Marsden, 2000; Michailides, 2000; Suzuki, 2000). However, the magnitude of the negative abnormal return is smaller (hardly more than 2% except for Burton *et al.*, 1999) compared to the average of 3% for public offering (Smith, 1986). A few international studies, mainly in the developing markets of Europe and Asia, show significantly positive two-day announcement period abnormal return for rights issue announcements; see for example, Bohren *et al.* (1997) for the Norwegian rights issues and Tsangarakis (1996) for rights issues in Greece.

A positive announcement period abnormal return is consistent with the view that the market recognises the issuing firms' growth opportunities sometime over the period preceding the announcement, and that the new issue is undertaken to obtain funds necessary to fund them. The negative abnormal reaction, on the other hand, could be consistent with the view that new issues follow increases in share prices that are the result of market errors. The share prices may have gone up for no good reason, and firms, recognising this overvaluation, capitalise on the market errors to obtain capital cheaply. Nevertheless, for the existing shareholders to gain from the cheap capital it is necessary for this to be raised from the new shareholders. In a rights issue, no wealth transfer can occur if all the shares are taken up by the existing shareholders. The management of a firm that believes its shares to be overvalued should use an offer for sale or placing rather than a rights issue, as

¹⁴ Cited in Marsh (1979).

long as the discount is less than the extent of the perceived overvaluation. The next section provides a summary of the most commonly cited theoretical explanations for the share price decreases at announcement.

2.8 Explanations for the Market Reaction

The market reacts negatively to the announcement of equity issues because of its belief that the announcing firm's management took the decision because it believes that the shares are overvalued, owing to information asymmetry that exists between managers and investors about the future value of the firm's assets in place and new investment opportunity (Myers and Majluf, 1984). A manager of overvalued firm will issue equity and invest even when the net present value (NPV) of the project is zero. Knowing that managers would avoid issuing undervalued shares, investors will interpret an equity issues as a signal of overvaluation. The negative share price reaction represents an adverse selection premium by investors to compensate for the risk of overvaluation of the company's shares. The greater the overvaluation the higher the stock price reaction. The model assumes that the new shares are issued to new investors in which case managers of the issuing firm are able to raise the required capital at a cheaper price.

However, the model does not say what happens when negative NPV projects are involved or when shares are issued to the existing shareholders. Eckbo and Masulis (1992) extend the model to consider rights issues, that is, allowing shareholder participation in the issue. The model suggests that rights issues reduce the adverse selection and hence, causes less negative price reaction to a rights issue announcement. They also show that when all existing shareholders take-up the rights and subscribe to the new shares, the adverse selection problem disappears. In the case of a rights issue, therefore, the argument of information asymmetry should not play a role. However, the fact that existing shareholders sell their rights and new investors buy shares indicates that information asymmetry does play albeit diminished role. Cooney and Kalay (1993) allows a possibility of negative NPV projects in the model and show that it is possible for an equity issue announcement to be associated with a positive market reaction.

Jensen (1986) provides another explanation based on the free cash flow problem, suggesting that the negative stock price reaction is due to investors' concern that the management may use the proceeds from an equity issue to increase their private benefits at the cost of the value of the firm. It can also be seen as overinvestment of free cash flow problem. Corporate managers prefer to increase the amount of assets under their control even if doing so causes reduction in firm value. They prefer to invest more of firm's free cash flows in empire building and in perquisite consumption instead of distributing the free cash to the shareholders. Equity offering thus conveys higher probability of overinvestment of free cash flows on the part of managers. A price decrease reflects the considerably higher agency costs to the shareholders in the effort to ensure the higher amounts of money in the hands of the management are not wasted. It is important to note that to this explanation it does not matter whether the new shares are issued to new or to the existing shareholders.

Negative share price reaction could also be due to share ownership changes following the issue. Potentially, when the new shares are offered, the ownership structure of the issuing firm will change. When the issuing firm places a large block of shares to a small number of large investors it will lead to an increased concentration of ownership. Concentrated ownership overcomes the free rider problems caused by dispersed ownership and serves to the benefit of shareholders (Shleifer and Vishny, 1986). Concentrated owners are able to exploit the private benefits at the expense of other smaller holders (Shleifer and Vishny, 1997). Slovin *et al.* (2000) claim that a possible reason for their finding of positive abnormal returns for the placing announcement compared to the negative abnormal return of rights issues in the UK may be that placing distributes more shares to outside shareholders, resulting in increased ownership dispersion and increased external monitoring.

In the window of opportunity explanations, it is argued that managers decide to issue equity based on favourable economic conditions like business cycle expansions and hot issue periods (Choe, Masulis and Nanda, 1993; Bayless and Chaplinsky, 1996). Better investment opportunities are available for firms during these periods. Stock price reaction is therefore expected to be less negative for equity issues announced during good times.

2.9 Summary and Conclusions

This chapter provided an overview of the firms' financing process with a particular emphasis on the mechanics of rights issues. Firms in the UK raise a greater proportion of their required equity capital through rights issues. Given the size and economic significance of the UK corporate market, it provides a good environment for analysing various equity offering-related issues as an alternative to the US market. The UK market also provides a good environment for testing issues related to rights issues relative to many other markets e.g., European and Asian markets, where rights issues are equally popular.

Rights issues allow shareholders to maintain their interest, in the ownership of the company by ensuring that new shareholders are not brought into the company on preferential terms to the disadvantage of the existing shareholders. The predominance of rights issues reflects the requirements in the Company Law, the regulations of the Stock Exchange, and the influence exerted by the powerful institutional investors who favour the retention of rights issues as a standard method of issuing additional shares. The rights issues are not without drawbacks. For example, from the issuer's viewpoint, rights issues may not be the most effective way of raising money. There is a delay before the issuer actually receives the funds due to the time required to approve the issue and the period given to the existing shareholders to make up their minds whether to subscribe to the rights or sell them off. Rights issues are usually offered at a discount to the prevailing market price to ensure an adequate level of take-up. Rights issues can be administratively difficult if there are a large number of shareholders are involved.

Theoretically, rights issues are not expected to lead to significant effects on shareholder's wealth. This is mainly because the new shares are allocated to the existing shareholders on *pro rata* basis. The earlier evidence is consistent with this theoretical prediction but the recent evidence is not. Rights issues experience significant two-day announcement abnormal returns, although the magnitude of the reaction is, on average, smaller compared with that of firm commitment offerings. An exception is the market reaction to rights issues in the European markets, where the evidence shows significant positive announcement period abnormal returns.

Recent research works show a growing body of evidence that the equity-offering firms earn significantly negative long-run abnormal returns. Very little of this research effort has been directed to rights offerings. The main objective of this thesis is to investigate the long-run stock price performance following rights issues in the UK. Consequently, the next chapter is devoted to the discussion of the existing literature on long-run performance following SEOs announcements.

Table 2.1 Wealth effects of rights issues

This table summarises both the UK and International evidence on the wealth effects of rights issue announcements.

Author(s)	Sample	Period	Benchmark	Results summary
Panel A: UK rights issues				
Burton <i>et al.</i> (1999)	110 UK ordinary share issues: pure issues (37), non rights issues (71)	1989-1991	FT All Shares	$T\text{DAR}_{(0,1)} = -7.76\%^{**}$ (rights issues); -0.64% (non-rights issue). Rights issues are bigger (48.9%) than non-rights issues (17%). $T\text{DAR}_{(0,1)}$ significantly negatively related to rights issue method.
Burton <i>et al.</i> (2000)	116 UK SEOs	1989-1991	FT All Shares	$T\text{DAR}_{(0,1)} = -2.89\%^*$. Significantly better the higher the growth rates in the pre-years. $T\text{DAR}_{(0,1)}$ only affected by growth opportunities when the firm's performance is poor.
Lewis (1995)	203 rights issues by re-issuing UK IPO firms	1980-1988	HGSC	$\text{CAR}(M-3,-1) = 11.87\%$ (FTA), 11.92% (HGSC), 6.18% (Market capitalisation decile)
Michailides (2000)	2991 rights issues LSE	1975-1996	EW portfolio VW portfolio	$T\text{DAR}_{(-1,0)} = -1.33\%^{**}$ using HGSC $T\text{DAR}_{(-1,0)} = -1.79\%$ (EW), -3.09% *(VW)
Marsh (1979) ^a	1145 LSE rights issues	1962-1975	FTA share index	Issuers outperformed the market by 25%-30% pre-year. Insignificant 1.3%-2.1% abnormal returns on $t = 0$ depending on benchmark. Price temporarily falls 0.9% between cum-date to a week later but recovers at 1.8 after a month. Unrelated to issue size.
Merrett <i>et al.</i> (1967) ^a	110 UK rights issues	1963	Daily Mail Index	Capital gain 1% over the issue date 3% over the year following the issue
Slovin <i>et al.</i> (2000)	220 UK rights offerings: Insured (200), Uninsured (20)	1986-1994	FT All Share Price Index	$T\text{DAR}_{(-1,0)} = -3.09\%^*$ for total sample; Insured (-2.90%)*; Uninsured (-4.96%)*
Suzuki (2000)	694UK Rights issues	1991-1996	FT All Share Price Index	$\text{CAR}(-125,-2) = 5.7\%^*$. $T\text{DAR}_{(-1,0)} = -1.29\%^*$; $-5.2\%^*$ (Investment), 0.01% (acquisition), -1.57% (Repay debt).

Panel B: International rights issues

Eckbo and Masulis (1992)	181 US (NYSE/AMEX) rights issues: Standbys (128), uninsured(53)	1963-1981	V-W market portfolio	$CAR_{(-60,-2)} = [\text{standbys: } 4.57\% \text{ ** (industrial), } 0.11\% \text{ (utilities)}; \text{ Uninsured: } -2.38\% \text{ (industrials), } 3.11\% \text{ (utilities)}]. \text{ TDAR}_{(-0,1)} = [\text{standbys: } -1.03\% \text{ ** (industrial), } -0.53\% \text{ (utilities)}; \text{ Uninsured: } -1.39\% \text{ (industrial), } 0.23\% \text{ (utilities)}]$
Muhtaseb (1994)	69 rights issues by NYSE/Amex industrials	1964-1984	CRSP V-W market portfolio	$TDAR_{(-0,1)} = -1.50\% \text{ *}$. Significantly positively related to relative subscription price
Singh (1997)	63 underwritten public offers by US utilities	1963-1985	CRSP V-W	$TDAR_{(-1,0)} = -1.07\% \text{ *}$
White and Lusztig (1980)	90 Rights issues on WSJ	1962-1972	VW Price Relative stocks	$TDAR_{(-1,0)} = -1.03\% \text{ *}$
Scholes (1972)	345 NYSE secondary rights issues	1947-1965	S&P Composite	$TDAR_{(-1,0)} = -0.587\%$
Smith (1977)	853 NYSE rights offerings	1926-1975	CRSP VW (monthly)	$CAR_{M(-12,-1)} = 8.4\%$. $TMAR_{(-1,0)} = -1.39\%$. Price decline 2 months pre-announcement recovers in same magnitude 2 months post announcement.
Nelson (1965) ^a	380 NYSE rights issues	1946-1957		-0.2% from pre-announcement 6 months and post-rights trading period (difference between before and after statistically insignificant)
Bohren <i>et al.</i> (1997)	200 Norwegian rights issues: Uninsured (79); Standbys (121)	1980-1993	Value weighted market index	$CAR_{(-40,-2)} = 2.79\% \text{ **}$. $TDAR_{(-1,0)} = 0.47\% \text{ **}$. Greater for uninsured (1.55%*) than for standbys (-0.23%). More negative the greater the issue size and pre-announcement run-ups. More positive the greater the pre-issue board members and CEOs ownership. Deep discounts do not signal negative information
Loderer & Zimmermann (1988)	122 rights issues in Switzerland	1973-1983	V-W Swiss Bank Corporation	$TMAR_{(-1,0)} = +3\%$
Tsangarakis (1996)	38 Rights issues at Athens SE	1981-1990	Greece Market index	$TDAR_{(-1,0)} = 3.97\% \text{ *}$
Marsden (2000)	88 New Zealand rights issues: Underwritten (62); non-underwritten (26).	1976-1994	BSP Index; SE Ordinaries Gross Index	$CAR_{(-30,-1)} = 7.11\% \text{ *}$. $TDAR_{(-1,0)} = -1.01\% \text{ *}$. More negative for underwritten (-1.74%*) than for non-underwritten (0.75%**). More negative the large the relative issue size.

Ball <i>et al.</i> (1977) ^a	193 Australian rights issues	1960-1969	AR = 10% in the year pre issue. Little unusual behaviour after apart from 0.9% decline in the month after the issue.
Kang (1990)	89 rights issues in Korea	1984-1987	TDAR _(-1,0) = 0.96%**
		KoreanComposite index VW	

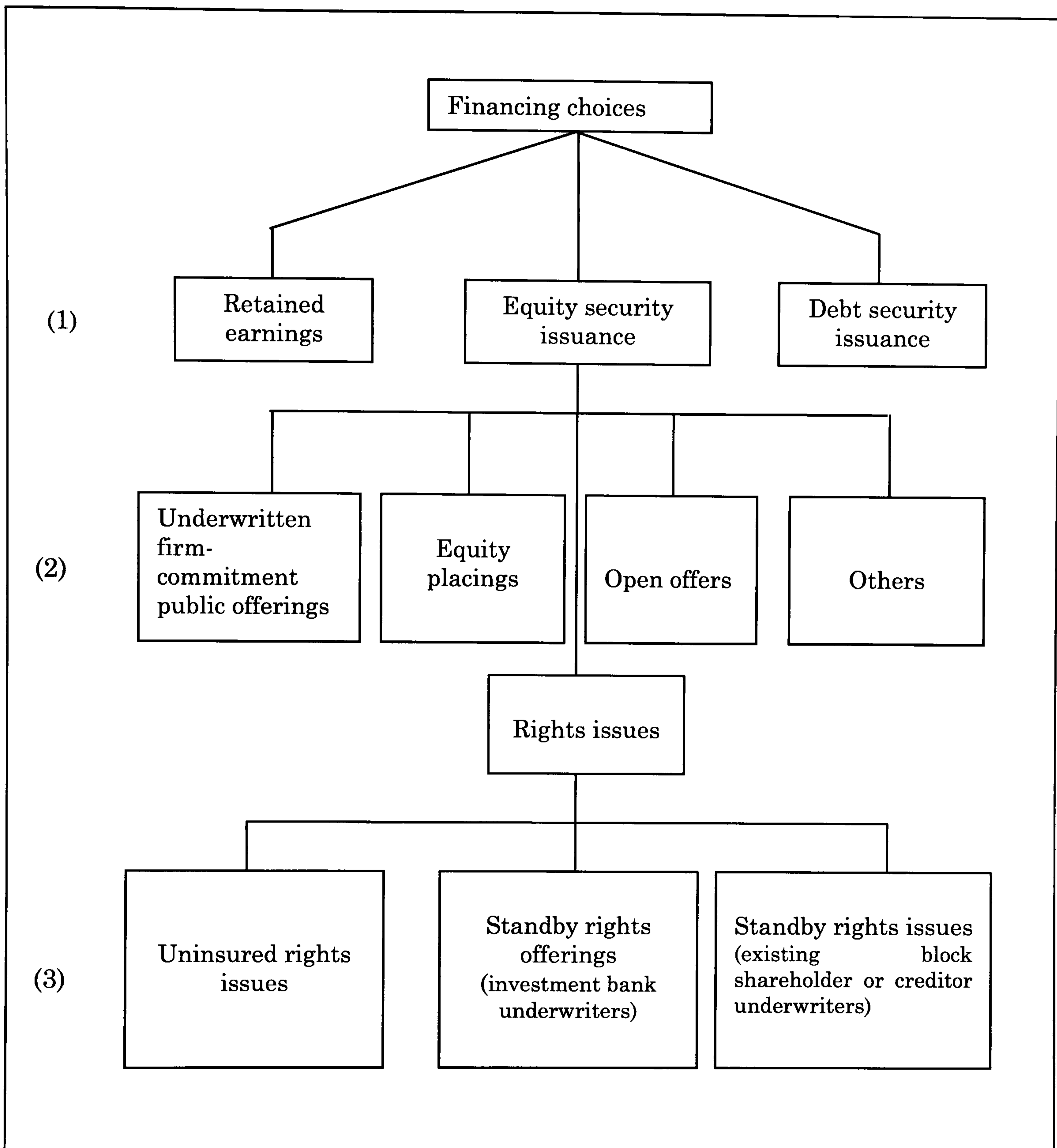
^a No specific details were available to ascertain the level of significance.

TDAR = Two-day announcement period abnormal returns

TMAR = Two-month announcement period abnormal returns

** (“**”), statistically significant at 0.01 (0.05) level, as provided in the articles.

Figure 2.1 Model of Financing Choices



Appendix 2.1 Theoretical analysis of the wealth effects of rights issues.

Does selling shares to the existing shareholders at a discount really make any difference to them, especially since they already own the company? Does the action of the existing shareholders matter? Suppose ABC Holdings, whose 50m outstanding shares are quoted in the stock market at £2.60p each, decides to raise £41.6m via rights issue. The company has considered two alternative terms; to issue 20 million shares at a subscription price of £2.08 (20% discount; a 'two-for-five issue), or 32 million shares at a subscription price of £1.30 (50% discount; a 'sixteen-for-twenty-five' issue). Table A2.1 presents the analysis. The primary objective of the analysis is to demonstrate that as long as the new share are offered to the existing shareholders in proportion of their pre-offering holdings, the level of discount will only lead to different price changes. Neither a deeper discount nor the action of the existing shareholders has any real impact on their wealth.

Table A2.1 Theoretical analysis of shareholders wealth effects of rights issues

			Rights exercised	Rights Sold	Do nothing
Panel A: Discounted at 20%					
Initial investment (5 shares)	@	2.60	13.00	13.00	13.00
New shares (2 shares)	@	2.08	4.16		
Total Investment (7/5/5 shares, respectively)			17.16	13.00	13.00
Investment after the issue (7/5/5 shares, respectively)	@	2.45	17.16	12.26	12.26
Decline in the value of the investment				(0.74)	(0.74)
Proceeds from the sale of 2 rights*	@	0.37		0.74	0.74
Net position			0.00	0.00	0.00
Panel B: Discounted at 50%					
Initial investment (25 shares)	@	2.60	65.00	65.00	65.00
New shares (16 shares)	@	1.30	20.80		
Total Investment (41/25/25 shares, respectively)			85.80	65.00	65.00
Investment after the issue (41/16/16 shares, respectively)	@	2.09	85.80	52.32	52.32
Decline in the value of the investment				(12.68)	(12.68)
Proceeds from the sale of 16 rights*	@	0.79		12.68	12.68
Net position			0.00	0.00	0.00

* the value of the right is the difference between the ex-rights price and the subscription price.

In Panel A, an investor who decides to exercise the rights, buys 2 new shares @ £2.08 for each 5 shares held @ £2.60, leading to an average value of \approx £2.45 ex-rights. In other words, the market price would adjust down from £2.60 to £2.45 to reflect the fact that new shares were offered at a subscription price lower than the pre-issue market

price. A Shareholder who does not want to put up money for new shares would sell their rights @ $\approx \text{£}0.37$ ($\text{£}245 - \text{£}2.08$), which would compensate the loss of value due to price fall ex-rights. A shareholder who simply ignores the rights issue would start with five shares worth $\text{£}13.00$ but end up with five shares worth only $\text{£}12.16$. In practice, when a shareholder does nothing the company will normally sell his entitlement to the new shares on his behalf and send the proceeds to him, which would compensate for the ex-rights price fall. A similar analysis can be done for Panel B. In the end, the net position is the same in each case, regardless of the discount or the existing shareholders' action.

CHAPTER THREE

THE LONG-RUN PERFORMANCE FOLLOWING SEASONED EQUITY OFFERINGS (SEOs): A REVIEW OF LITERATURE

3.1 Introduction

The previous chapter described different aspects of long-term financing choices open to firms with shares already trading on the market. It then described the subsequent choices of equity offering methods before focusing at rights issues, the offering method of particular interest in this thesis. It highlighted the process of rights issues in the UK market, the theoretical wealth effects of rights issue announcements and provided a summary of the empirical articles that report evidence on such effects both in the UK and internationally. Some of the most commonly cited explanations for the equity announcements price decreases were also highlighted.

Recent studies document evidence of long-run underperformance following equity offerings, among other corporate events. This chapter is devoted to providing an overview of the previous empirical evidence on long-run stock performance following the seasoned equity offerings (SEOs). The growth of this literature seems to be biased towards public offerings, based mainly on the assumptions under the Myers and Majluf (1984) model, where the new shares are issued to new investors, hence the motivation for managers to exploit the market's misvaluation of the firm's shares. Overvaluation exploitation has so far been the most cited reason for the long-run underperformance. Since in rights issues the new shares are offered to the existing shareholders, this explanation may not apply in a similar fashion. As a result, the evidence is presented separately.

The rest of the chapter is organised as follows: Section 3.2 presents a summary of the empirical articles that provide evidence on the long-run stock performance for both public and rights issues. Section 3.3 summarises the theoretical explanations for the underperformance following equity offering.

Section 3.4 discusses some of the concerns about the sustainability of the evidence while Section 3.5 provides summary and conclusions of the chapter.

3.2 Long-run Performance Following Seasoned Equity Offerings

A substantial research effort has been directed towards the long-run return anomaly following several corporate events. This section is deliberately directed towards providing a summary of the main empirical evidence on long-run performance following equity offerings only. Because of the differences between public offerings and rights issues, the evidence on rights issues is presented separately in Section 3.2.2.

3.2.1 Public issues

Panel A of Table 3.1 summarises previous research providing evidence on the long-run performance following public offers. Spiess and Affleck-Graves (1995) examine a sample of 1247 primary seasoned equity offering conducted at the NYSE/AMEX and NASDAQ over the period 1975-1989. The authors find that issuers significantly underperformed nonissuers over 1-, 3-, and 5-year holding periods, using different benchmarks and techniques. For example, they find significant cumulative average abnormal returns (CARs) of -39.36%, -31.24% and -30.99% for the size, size and industry and size and book-to-market ratio-matched nonissuers, respectively, over the five-year holding period. The average three-year (five-year) buy-and-hold return (BHR) for the offering firms is 34.11% (55.72%) against 56.96% (98.11%) for industry-and-size-matched nonissuing firms. The results were identical when the control firms were instead chosen based on size and book-to-market ratio. The underperformance is more severe for the smallest, youngest, low book-to-market ratio and Nasdaq-traded firms. Industry classification does not seem to have explanatory power to explain the underperformance.

Moreover, the CARs were positive in the first couple of months after the offering (significantly positive in the first month), but significantly deteriorate in the subsequent months. The underperformance also persists across most offering years and after controlling for trading systems, offer size, and firm age

since IPO. The authors conclude that their results are consistent with managers being able to take advantage of firm-specific information which enables them to determine when the market is willing to overpay, or is currently overpaying, for the firm's shares, and issue new equity. The authors, therefore, suggest that the reported long-run underperformance is a result of market failing to adjust fully for the information contained in the equity-offering announcements. At the announcement, the market reacts negatively, but when the actual offering occurs and beyond, more content of the event is revealed and the market further adjusts the price downwards.

Loughran and Ritter (1995) examine 3702 seasoned equity offerings conducted on the NYSE, AMEX and Nasdaq over the period 1970 to 1990 and find that SEO firms significantly underperform relative to non-issuing firms up to five years after the offering. The SEOs' average three-year (five-year) buy-and-hold return is 15% (33.4%) for issuing firms against 48.0% (92.8%) on size-matched non-issuing firms representing a wealth relative of 0.78 (0.69). This means that 44% more money needs to be invested in the issuers than in the non-issuers to achieve the same terminal wealth five years later. The results are consistent using several alternative benchmarks (based on the commonly used market indices in the US as well as the Fama-French's (1993) three-factor model, which controls for confounding effects; i.e., differences in betas, differences in size and differences in book-to-market ratios).

Moreover, SEOs follow periods of significant good stock performance for the issuing firms; the average raw buy-and-hold return over the 12-month period prior to the issue announcement is 72%. However, the authors find that the long-run underperformance is not a manifestation of long-term return reversal because extreme winners that did not issue equity dramatically outperform extreme winners who issued. The degree of underperformance differs over time in the sense that issuers who issued during years of little issuing activities did not underperform as much, whereas issuers who issued during period of high volume severely underperformed. This is consistent with the market correcting the perceived overvaluation over time having interpreted the offering during the high volume period as issuers exploiting overvaluation. The underperformance is insignificant in the first six months, severe in the next

18 months, and noticeably narrows five years after the issue. Adjusting for the book-to-market ratio to reflect the effects of the issuing firms' growth explains only a part of the underperformance. The results also indicate that the underperformance is slightly more in the mature firms than in the young firms, suggesting that the reported SEO underperformance is largely independent of IPO underperformance. If the SEO underperformance is a manifestation of underperformance in IPOs included in the sample, then one would expect more underperformance in the young firms (issuers within 5 years of IPO) than in the mature firms (issuers in more than five years of IPO).

In addition to suggesting a possible link of the reported underperformance to insider trading and issuers' operating performance, the authors conclude that their results are consistent with a market where firms take advantage of transitory windows of opportunity by issuing equity when on average their shares are substantially overvalued.

Although the two studies, Spiess and Affleck-Graves (1995), and Loughran and Ritter (1995), bear some similarities in the sense that they both build upon Ritter's (1991) setting, they differ in several aspects. Unlike Loughran and Ritter (1995), Spiess and Affleck-Graves' (1995) sample includes only primary seasoned equity offerings which helps to avoid confounding effects from such other factors as insiders sales in the case of secondary offerings, and contingent claim sales in the case of unit offerings. This approach, they argue, provides a direct examination of post-offering performance. Spiess and Affleck-Graves report CARs results based on size-matched, size-and-industry-matched, and size-and-book-to-market-matched, nonissuing firms and BHARs based on size and industry matched non-issuing firms only. Loughran and Ritter, on the other hand, report results based of size-matched control group only.

To ascertain whether the reported evidence on long-run underperformance is not a result of benchmark and statistical test misspecification, Jegadeesh (2000) considers a number of benchmarks and new test statistic technique. Apart from finding the lowest underperformance under the size to market-to-book ratio, the author finds that underperformance is still significant across all benchmarks. See also, Barber and Lyon (1997). The author also finds that the long-run underperformance is insensitive to

benchmarks that take into account such other firm characteristics as earnings-to-price ratio and past firm returns. Brav, Geczy and Gompers (2000), examine SEOs in the US from 1975 to 1992 and find that underperformance is concentrated primarily in small issuing firms with low book-to-market ratios.

Contrasting results are reported in Eckbo *et al.* (2000) and Mitchell and Stafford (2000) showing that the underperformance disappears with improved methodology or statistical techniques. Eckbo *et al.* (2000) report significant underperformance using the matching techniques but find no significant underperformance using a multi-factor model and matching by both size and market-to-book ratios. They argue that issuer's underperformance reflects lower systematic risk exposure for issuing firms relative to the matched nonissuers. As equity issues lower leverage, their exposure to unexpected inflation and default risks decreases, thus decreasing their stocks' expected returns relative to matched firms. They conclude, therefore, that underperformance is explained by a failure of the matching technique to provide for a proper control for risk.

Mitchell and Stafford (2000), use a large data 1958-93 to re-examine the long-term stock price estimates using corporate events; mergers, SEOs and repurchases. The authors find the popular approach of measuring long-term abnormal performance with mean BHARs alone or in conjunction with bootstrapping to be an inadequate methodology because it assumes independence of multi-year event-firm's abnormal returns. The authors show that event-firm's abnormal returns are positively cross-correlated when overlapping in calendar time. Consequently, the authors strongly advocate a methodology that accounts for the dependence of event-firm's abnormal returns such as the calendar-time portfolio approach. Using such approach, the authors find very little evidence of long-term abnormal performance.

Evidence on the long-run return anomaly following SEOs has also been reported in Japan and UK. Cai and Loughran (1998) document low stock returns for the Japanese firms conducting 1389 SEOs during the 1971-1992 period. In their sample, an equally weighted portfolio of SEO firms produces a 3-year (5-year) buy-and-hold return of 33.7% (74.1%) compared to 52% (112.9%) for an equally weighted portfolio of non-issuing firms of similar market

capitalisation, with a wealth relative of 0.88 (0.82).¹⁵ Significant underperformance is reported against all other benchmarks and over the 3- and 5-year holding periods. The underperformance is most significant in the first two years after the offering. Similar to Jegadeesh (2000) and Barber and Lyons (1997), the degree of underperformance is lower against size and market-to-book matched non-issuing firms than against the other matching criteria. The authors also find that characteristics such as firm size, length of time since the IPO date, prior year stock returns, issue volume, and firms' pre-issue growth cannot explain the low stock returns for their SEO sample; neither can the issuers' Keiretsu affiliation and ownership structure. The authors conclude that their results are in favour of the timing hypothesis as a more plausible explanation for the new issue puzzle for the Japanese equity-issuing firms.

In another study on Japanese SEOs, Kang *et al.* (1999) find that public equity issuers also significantly underperform the size-matched firms over three-year (-22.10) and over five-year (-74.06%) holding periods, and the size and market-to-book ratio matched firms over the three-year (-14.69%) and the five-year (-69.41%) holding periods. The underperformance is not concentrated in smaller firms, issue size or market-to-book ratios. The authors also report surprising results on privately issued equity. The theoretical arguments and the empirical evidence indicate that the market strongly reacts positively to private equity (see, Wruck (1989); Slovin *et al.* (2000)). However, the authors report significant long-run underperformance for privately issued equity. The result provides strong evidence against the underreaction hypothesis as an explanation for the long-run underperformance of SEOs. Such results also cast doubt whether the window of opportunity is supported because one would expect that the negotiations surrounding private issues would allow the buyers to obtain enough information about the issuing firm from which the buyers would be able to determine if the firm is overvalued. This would make it difficult for management to take advantage of windows of opportunity.

¹⁵ Although only two benchmarks are summarised in Table 3.1 for brevity and to facilitate comparison, the authors consider TSE equally weighted, industry equally weighted, market-to-book matched, and book-assets and industry matched non-issuers.

3.2.2 Rights issues

The advancement in the literature seems to be biased towards the US market where virtually all equity issues are issued to the public through firm commitment offerings. Very few studies examine the UK market where rights issues are more common. Although the very early studies highlighted the possibility of post-issue underperformance, less effort were directed to it until in the mid-1990s. For example, Merrett, Howe, and Newbould (1967) analyse 110 UK rights issues made in 1963 and report evidence indicating that the capital appreciation of shares, which were the subject of rights issues, proved to be 3.2% higher than the average share appreciation represented by the Daily Mail Index of share prices over the year following rights issues. They interpret the result as indicating that, at the time of the issue, the firms' shares were undervalued, although they did not pursue this further.

Marsh (1979) analyses sample of rights issues made in the period 1962 to 1975 by companies listed on the LSE, using a number of different benchmarks: FTA only, CAPM with different assumption regarding risk level measured by beta, and matched portfolios. In both FTA and CAPM based benchmarks, the two-year cumulative abnormal returns were positive between 5.2% and 6%. However, the author observes that virtually all the large positive abnormal returns were from small companies. The author argues that if there were a size factor, where smaller companies provide higher returns than their larger counterparties, then for any random sample of companies differing in terms of size, one would expect an equally weighted portfolio to outperform one weighted by market value. Similarly, for two equally weighted portfolios, one would expect the portfolio containing smaller companies to show better performance. As a result, the positive abnormal result might purely be a result of comparing an equally weighted portfolio of rights issuers with a market value weighted index. Consequently, the author adopts matching benchmarks, controlling for size and/or industry effects.¹⁶

¹⁶ The industry benchmark is formulated by matching the event security j in the sample with a portfolio of similar non-information securities p_j where p_j is a portfolio of other securities from the LSPD random sample, which come from the same industry as that of the rights-issuing company.

The author finds a positive abnormal return of 7.4% against the value weighted industry portfolio but a negative abnormal return of -6.4% (although they were positive in the first six months) against equally weighted industry portfolio. Furthermore, the author argues that the negative abnormal return against equally weighted industry portfolio could quite easily reflect the fact that companies making rights issues during that period were slightly larger than their non-issuing counterpart. However, measuring the abnormal returns against a portfolio matched by size,¹⁷ the author finds a lower but still negative abnormal return of -2.2% over the two years after the announcement (although they were positive in the first year). The author concludes that the choice of abnormal return measuring method is crucial in interpreting the results, and that the two factors, industry and size, could not explain the abnormal returns away.

Investigation into the long-run performance of rights issuers received another boost in the early 1990s. Neil Austin in his comment in KPMG (1992: p.3), looks at the average price movements of the 37 companies that made “one-to-three” and “one-to-four” rights issues in 1991, and found that the initial gains in market value were short lived. In all rights issues in all quarters, the share price fell in the following year, where a significant proportion fell below the rights issue price. Surprisingly, this trend was opposite to the rising market price over that period.

Levis (1995) examines 158 UK re-issuing IPO firms (out of a total sample of 713 IPOs) via rights issues within the 5-year aftermarket period during the period from 1980 to 1988. Levis finds that over the 18 months period from the end of the first full trading month after the rights issue announcement, the abnormal returns against the Financial Times Actuaries (FTA) index, the Extended Hoare Govett Smaller Companies (HGSC) index¹⁸, and a control

¹⁷ The size-matched portfolio consisted of all the other LSPD random sample companies, which were in the same size category as the issuing companies at the date of the rights issue announcement.

¹⁸ HGSC index is a value-weighted index consisting of the lowest 10% by capitalisation of the Main and the USM markets of the London Stock Exchange (There are about 1600 firms).

portfolio of all firms in the same size decile,¹⁹ were -18.49%, -11.21% and -15.10%, respectively. The author also finds that: (i) Reissuing is quicker the higher the initial IPO returns, and the reissuing decision is related to the performance of the IPO firm in the early months in the after market, consistent with the feedback hypothesis.²⁰ This supports the earlier conclusion in Welch (1989) that the IPO and SEO activities are interrelated. (ii) The market reaction to the rights issues is not related to the initial IPO returns, unlike the evidence in the US. (iii) Re-issuing firms are characterised by significant positive abnormal returns in the 12 months preceding the announcement of a SEO. (iv) The average time lapse between the IPO and the first rights issue is about 2.4 years.

The post-issue performance documented in this study refers explicitly to firms that obtained a public listing within the five-year period prior to the announcement of the rights issue. Thus, the post-SEO underperformance may be considered as part of the long-run IPO underperformance documented in previous studies (e.g., Ritter, 1991; Levis, 1993). The author recommends a much wider study of SEO firms to come up with evidence that is more conclusive. Moreover, the author suggests that since SEO announcements follow periods of protracted price run-ups, re-issuing firms typically have low book-to-market ratios, and therefore, further investigation is required to ascertain whether the post-issue negative returns is another manifestation of the poor returns observed in companies with low book-to-market ratios.

Michailides (2000) examines a bigger sample of UK rights issues during the 1975 to 1996 period, and finds that the rights issuing firms experienced superior buy-and-hold returns against the FTA Share Price Index return over

¹⁹ The control portfolios are constructed by all firms in the same size decile (market value of equity at the year-end prior to the offering) as that of the sample firm.

²⁰ Levis provides several possibilities. First, some firms with a definite need for a certain amount of capital may deliberately plan to raise it in two stages. They underprice the shares in the IPO to signal their quality, then subject to not receiving any bad news in the interim, they make further issues, otherwise, they abandon the plan. Second, some IPO firms might have suffered a shortfall in the capital expected from the IPO mainly due to adverse market reaction. These firms will return to the market at some later point to fulfil their funding requirements. Third, others may only be encouraged just by the rising stock price in the after market period (positive feedback signal) to take advantage of cheap equity capital, when there is misvaluations in the market.

the period between month 15 and month 1 prior to the issue announcement, to the tune of 20%. The author further finds a small drop in returns on the month of announcement followed by a rise up to month 2, after which the returns decline continuously before they stabilises after month 52. By the end of year 3, the pre-announcement increases were wiped out. However, only cold issuers show significant underperformance over four and five years after the offering at 0.1 and 0.05 levels respectively. Theoretically, since in rights issues the new shares are issued to the existing shareholders, timing the issues to coincide with period when shares are overvalued to create value for existing shareholders, can not be the reason for the underperformance. For it to be the reason there must be evidence of significant differences in underperformance between issues made during the heavy and light SEO activities.²¹ Comparing the underperformance in these two groups of issues against FTA, industry and market-to-book value and industry and size benchmarks, the author finds no evidence of significant differences between hot and cold issuers, and concludes that overvaluation exploitation cannot explain the observed underperformance following rights issues in the UK. The author uses FTA Share Price Index as a way of mitigating the huge sub-sample differences between hot and cold group of issuers, where the number of observations in the hot group is almost three times that of the cold group but arrived at a similar conclusion.²²

Suzuki (2000) also reports significantly negative buy-and-hold abnormal return of -15% for UK rights issues two years after from the announcements against a size portfolio. In a contemporaneous study for 670 UK rights issues over the period 1989-1997, Abhyankar and Ho, (2001), find rights issuers to have significant buy-and-hold returns prior to the offering of between 56% and 80% depending on the benchmark portfolios and whether the portfolios are equally-, or value-weighted. The authors find that three years after the offering, issuers show significant underperformance using a number of benchmark portfolios; equally-weighted size and industry of -19.50% (value-weighted, -8.53%), equally-weighted book-to-market ratio of -17.62% (value-weighted, -

²¹ The author ranks all months in the sample according to 3-month moving average of the proceeds in real terms into quartiles and defines the top and bottom quartiles as representing the hot and cold periods, respectively.

²² The use of FTA Share Price Index, however, has its own problems, which will be highlighted later in Chapter 4.

15.62%), and equally weighted size and book-to-market ratio of -18.26% (value-weighted, -19.92%). There is a decrease in the buy-and-hold abnormal return using value-weighted compared to equally weighted portfolio, from which the authors conclude that the results abnormal returns can be explained by small firms, a conclusion similar to that provided in Brav *et al.* (2000). Moreover, the authors use calendar-time approach, Fama and French's (1993) Three-Factor model and Carhart's (1997) Four-Factor model and in both they show that the significance of the underperformance wears out or disappears. In turn, they conclude that the underperformance is sensitive to methodology used, consistent with the Fama's (1998) argument. See also Eckbo *et al.* (2000) and Mitchell and Stafford (2000) for public offerings in the US.

Internationally, however, evidence of underperformance following rights issues is mixed. While Cai (1998) and Affleck-Graves and Page (1996) document significant long-run underperformance following rights issues in Japan and South Africa, respectively, Dubois and Jeanneret (2000) find no evidence of underperformance following rights issues in Switzerland.

Cai (1998) documents evidence of subsequent poor long-run abnormal return for 260 Japanese firms that issued rights issues in the period 1971 to 1986. Over a 1-year window the average buy-and-hold returns from the end of the issuing month, is 26% against 44% for non-issuing firms with closest market capitalisation at the end of the issuing calendar month. Over the 3-year window, the average buy-and-hold returns is 63% against 90%, while over the 5-year window, the average buy-and-hold returns is 121.1% against 154.5%. The wealth relative for the issuing firms is 0.87 for the 1-year window, 0.86 for the 3-year window and 0.87 for the 5-year window. The wealth relatives reported here are relatively higher than those reported for the US, but compare well with those reported for the public issues on same market in Cai and Loughran (1998). The author also considers the sensitivity of the results to benchmarks specification, by choosing control firms by market-to-book ratios, size and market-to-book ratio and book-assets-and-industry. The issuing firms consistently underperformed all of the additional benchmarks specified. Over the 5-year window, issuing firms performed the worst relative to the book assets-and-industry-matched portfolio with a wealth relative of 0.82.

The year of issue, issue proceeds (1992 year-end yen value), issuing firms' size (1992 purchasing power adjusted), share ownership levels (both institutional and managerial), and their changes from year -1 level to year +1 level do not have explanatory power for the long-run underperformance. However, the underperformance is more severe in the highest market-to-book ratio quartile than it is in the lowest market-to-book ratio quartile. The author concludes that since the market-to-book value ratio is often used to measure firms' future prospects at the time of the offerings, the result is consistent with the case in which investors with the highest expectation are most disappointed when the issuing firms fails to perform subsequently. It may also suggest a support for the windows of opportunity hypothesis in the sense that managers time the issue to coincide with the time when investors are overoptimistic about the firm's prospects. A sharp contrast to this study is Kang *et al.* (1999) who find no evidence of long-run underperformance following Japanese rights issues over the period 1980-1988, against nonissuers matched by size and market-to-book ratio over both the 3-year and the 5-year holding window.

Affleck-Graves and Page, (1996) study firms listed on the Johannesburg Stock Exchange (JSE) that conducted rights issues between 1980 and 1990 and report significant poor subsequent performance, remarkably consistent with the evidences on the U.S. securities. Over the four years following the rights issue, issuing firms on the JSE earned an average return of 83.06% (16.3% p.a.) as opposed to 124.69% (22.4% p.a.) for a size-matched sample of non-issuing firms. The underperformance is strong for all groups and over all calendar years following rights offerings, but is more severe for the smaller firms, smaller rights offerings for younger firms, and for firms that had little trading activity in the rights. Because the overvaluation exploitation is limited in rights issues, the authors conclude that their observed underperformance is better explained by either the market cycles or the inability of issuing firms to generate sufficient internal funds to finance future projects.

Dubois and Jeanneret (2000) examine the long-run performance of Swiss firms, and report insignificant long-run abnormal returns relative to size and book-to-market-matched portfolios. These results are consistent across a number of benchmark specifications (CARs and Fama-French's (1993) Three-

Factor model). The authors conclude that their evidence is consistent with the recent evidence in the US that SEOs no longer suffer significant long-run underperformance (see, Brav *et al.*, 2000; Eckbo *et al.*, 2000; Mitchell and Safford, 2000).

In summary, the literature shows that even though there is no scope for managers issuing rights to exploit the market misvaluation for the existing shareholders' sake, rights issues follow periods of high issuers' stock price performance. The evidence so far shows that rights issuers also suffer long-run underperformance. Studying the UK rights issues market is expected to provide significant addition to the knowledge about the anomaly.

Unlike studies in the US, no study in the UK so far has attempted to analyse the buy-and-hold abnormal return patterns to assess whether the underperformance can be explained by various firm and issue characteristics. The available evidence for UK rights issues is also based on the market indices (e.g., Marsh, 1979; Levis, 1995) except for Abhyankar and Ho, (2001) and Suzuki, (2000) studies in which portfolios of matched firms are used. Also except for Michailides (2000), the rest report evidence for periods less than five years of post-offering period. There is need to re-examine the buy-and-hold abnormal returns using benchmarks and post-issue period frame similar to some of the previous studies to facilitate comparison.

3.3 Theoretical Explanations for SEOs Under-performance

3.3.1 Overvaluation exploitation and the window of opportunity

Myers and Majluf's (1984) model predicts that firms will only issue equity when they believe, based on their private information, the firm's shares are overvalued. This implies that managers are able to determine when the market is willing to overpay, or is currently overpaying for their firm's shares, and take advantage of such opportunities to raise equity capital cheaply. When the announcement is made, the market re-values the firm downwards to correct the misvaluation. The hypothesis assumes that the signal is not fully interpreted, and therefore, the market's response is incomplete. As more

information is revealed over time, the market continues to adjust the share price downwards. This hypothesis explains two patterns that Myers's pecking order theory cannot explain. That is: (i) issuers have low post-issue stock returns, (ii) many firms issue equity when they are apparently not constrained to. For example, the pecking order hypothesis predicts that firms issuing equity will have used up their debt capacity, implying that issuers must have had an increased debt-equity ratio prior to the offering. Korajczk, Lucas and McDonald (1990) find evidence showing that debt ratios typically do not increase prior to equity issues, suggesting that strained debt capacity is not the primary motivation for issuing equity. This explanation assumes that the new shares are issued to external shareholders. Therefore, in a way it is a bit difficult to explain the pattern in rights issues.

3.3.2 The underreaction hypothesis

This hypothesis is based on the notion that the market impounds only part of the information content in the share price at the announcement of a corporate event. When equity is eventually issued, the market learns more about the issuer's value and completes the reaction. Announcements of both equity and convertible debt issues are classified by investors as bad news and are associated with a negative market reaction. The underreaction hypothesis, therefore, predicts that issuers of these securities should experience poor abnormal returns in the post-offering period. On the other hand, the hypothesis predicts long-run positive abnormal return for events that received a positive market reaction, for example, announcement of private equity placements. Evidence in support of the hypothesis should meet at least two conditions. First, the abnormal returns in the post-offering period should be in the same direction as the announcement period abnormal return. Second, the firm's long-term abnormal returns and its announcement abnormal returns should be positively correlated.

The main implication of the underreaction hypothesis is that if the market fails to impound information in stock prices quickly, then the markets are not efficient, and short window event studies provide a biased estimate of the shareholder wealth effect of corporate announcements. Kang *et al.* (1999)

test this hypothesis on equity and convertible debt issue announcements, made at the Tokyo Stock Exchange 1980-1988. The authors argue that since the stock price reaction to convertible debt and equity issues is not negative for Japanese firms²³, then the hypothesis predicts positive long-run abnormal returns for the issuing relative to the non-issuing firms. However, the authors do not find sufficient evidence to support the hypothesis. The issuing firms perform poorly (except for rights issues) compared to comparable non-issuing firms.

Strong support for this hypothesis is found in the context of share repurchases. Ikenberry, Lakonishok and Vermaelin (1995, 2000) find significant positive market reaction to share repurchase announcement in the US and Canada, respectively, followed by significantly positive long-run buy-and-hold abnormal returns from which they conclude that the market treats repurchase with scepticism, leading to slow adjustment in prices over time. For a further analysis on market underreaction to the information contents of corporate events, see Daniel *et al.* (1997) and Barberis *et al.* (1998)

3.3.3 Investors' over-optimism

Suggested in Kang *et al.* (1999), the hypothesis suggests evidence of long-run underperformance to be consistent with a world where investors are too optimistic about the investment opportunities of some firms. In such world, investors are willing to pay more for the firm's shares. Firm managers too may be as optimistic as investors are and decide to issue equity. Alternatively, managers may be more realistic than investors are and just want to take advantage of the high valuation of their firm. As the investment opportunities eventually turn out to be less advantageous than they were expected, these firms experience poor stock returns because investors will be more disappointed. Kang *et al.* (1999) add that as long as short sales are costly, issuers will record long-run poor stock performance because the misvaluations due to excessive optimism are not eliminated immediately.

²³ For example, Kang and Stulz (1996), reports abnormal returns associated with security issues in Japan for the period 1985-1991 of 0.45% (public issues), 3.88% (private equity issues, 2.21% (rights issues) and 0.83% (convertible debt). See also, Kato and Schallheim (1992), cited in Kang *et al.* (1999).

Brous *et al.* (2000) and Jegadeesh (2000) and provide a test for this hypothesis by examining stock returns within a short window around earnings announcements.²⁴ Jegadeesh argues that if the market were systematically over-optimistic about the long-term prospects of SEO firms, a gradual correction of this over-optimism would lead to poor SEO performance because the market will be unpleasantly surprised by post-issue negative earnings announcement. The hypothesis predicts that the earnings announcement-window returns for the SEO firms should be negative relative to those of their benchmarks. However, if low returns for these firms are not due to biased expectations, the market will not be surprised at the time of the earnings announcements.

Jegadeesh computes four-day average returns, (-2, 1) period, around each quarterly earnings announcement dates (20 quarters) in the post-issue period, and compares them with the same computed for the matched firms. The average four-day return is 0.14% for SEOs versus 0.355% for the matched firms, giving a significant difference of -2.15% ($t = -3.55$). Brous *et al.* did not find significant differences but Jegadeesh blames this on the authors' failure to exclude SEO firms from the benchmark firms. Compounding the four-day abnormal returns over the 20 quarters in the post-issue period, the earnings announcement-window abnormal returns average 4.3% compared to the total underperformance of 34.3% for the whole 60-month post-issue period. Taking into account the number of trading days in the earnings announcement-window and the post-issue period, Jegadeesh concludes that the underperformance within the window is about twice the underperformance outside the window, offering a strong support that the long-term underperformance is attributable, at least in part, to market over-optimism about the SEO firms' prospects.

3.3.4 The earnings management hypothesis

Earnings announcements convey information to investors about the future cash flow potential of the firm. Investors use the currently reported earnings to project the firms' future earnings power and in turn, use these future earnings to value the firms' shares. Normally, equity offerings follow periods of high earnings, but in some cases, such high earnings are due to

²⁴ This is assumed the period when concentrated doses of specific information reach the market.

deliberate managerial manipulation. In the work of Kellogg and Kellogg (1991), highlighted in Rangan (1998), it is pointed out that managers of publicly traded firms manipulate reported earnings to increase the firm's stock price. The authors also argue that such managerial incentive is high around SEOs, because the current shareholders of the issuing firm are likely to benefit if the earnings management influence the market's perceptions of the value of the firm. Specifically, firms that practice earnings management can raise capital at more favourable terms than if earnings were not managed. However, the benefits of earnings management around equity offerings is partially offset by the expected costs to both the issuer and its managers if the practice is discovered and found to be above accepted standards.

The earnings management hypothesis proposed by Teoh *et al.* (1998a) and Rangan (1998), states that firms tend to manage earnings upward prior to an equity issue. Usually, aggressive management of earnings by the firm, for example, through income-increasing accounting adjustments leads into firms reporting higher earnings prospects or forecasts than it would otherwise. These higher earnings mislead investors into being over-optimistic about the issuer's prospects and consequently affect the price they are willing to pay for them at the time of the offering. Subsequently, when the earnings management reverses, the high pre-issue earnings are not sustained and the issuing firms record earnings decline in the post-issue period. As a result, when investors realise the transitory nature of the increases in earnings they become disappointed and revalue the shares downwards to the level justified by fundamentals, leading to the poor post-issue stock price performance.

The hypothesis predicts that: (i) Equity issuers have unusually higher income-increasing accounting adjustments before the issue and unusually poor earnings and stock performance after the issue. (ii) Equity issuers with unusually large income-increasing accounting adjustments prior to the offerings have the worst performance compared to those who do not. Support of this hypothesis requires evidence of the presence of earnings management around the offering date and an association between such earnings management and both the future earnings and the long-run stock returns.

Rangan (1998) and Teoh *et al.* (1998a) provide evidence that is consistent with both predictions based on US equity-offering firms, which they interpret as investors failing to recognise earnings management, causing post-offering stock underperformance. The two studies, however, differ in a number of ways including the sample size and period of coverage, the window within which earnings management activities are measured, and the post-offering performance period. In another study by Shivakumar (2000), a similar behaviour in net income and accruals around equity offerings is reported and post-offering abnormal accruals were found to predict subsequent decline in net income. However, Shivakumar report evidence of a negative relationship between pre-announcement abnormal accruals and the stock price reaction to the offer announcement. The author interprets these results as suggesting that investors unravel earnings management well before an equity offering. The author further argues that rather than being intended to mislead investors, the earnings management by issuers may actually be a rational response of issuers to anticipated market behaviour at the offering announcements. The author points out that the evidence in Rangan and Teoh *et al.* may suffer from test misspecification.

Chaney and Lewis (1995) provide a theoretical analysis, showing that earnings management affects firm value when value maximising managers and investors are asymmetrically informed. For discussions on how to detect earnings management activities and various issues involved in accruals measurement, see for example, Jones (1991), Dechow *et al.* (1995), Kang and Sivaramakrishnan (1995), Shivakumar (2000).²⁵

3.3.5 The insider trading hypothesis

This hypothesis is based on the assumption that insiders²⁶ have access to private information about the firm's value and external investors do not. The

²⁵ The hypothesis has been tested on other corporate events. A few examples include, Erickson and Wang (1999) on mergers and Teoh *et al.* (1998b) on IPOs.

²⁶ Lee, Mikkelsen and Partch, (1992) define insiders as individuals who legally hold a management position in a firm. That is, individuals legally defined as insiders but they are not directors or do not hold a management position in the firm are excluded. For example, an institution without board representation to the firm, but hold more than 10% of shares may be excluded. As to the size of trading, Lee *et al.* consider any trade of 100 shares or above by an officer or director as a reasonable size for analyzing the

finance theory e.g. Myers and Majluf (1984) shows that managers issue equity only when they believe the firm's shares are overvalued in order to create value for the existing shareholders. With this private information, firm managers may have incentive to trade on their personal account to create value for themselves. If firm managers announce an equity-issue because they believe the shares are overvalued, one would expect managers to sell, or delay their buying activities until after the issue announcement. This predicts a net insider abnormal selling before, and a net insider abnormal selling after the issue announcement. A further net abnormal selling after the issue is announced may indicate the managers' belief that the shares are still overvalued. If the market still interprets insiders' trade (selling) as a signal of overvaluation, it will continue to revise the price downwards. This would amount to continued price fall until the correction is completed and therefore it may explain the observed long-run underperformance in the SEO firms.

Trading on privileged information is restricted both by law and by the regulations; it is illegal. Managers suspected or convicted of insider trading can suffer personal cost such as losing their jobs and any associated benefits. Therefore, insiders with access to private information related to the new equity issue announcement will only take advantage of it if the expected gain from such trades exceeds the expected cost of any prospective market and legal penalties. Consequently, the credibility of the signal from insider trades around the offer announcement is magnified and so is the effect it has on the share price. Managers will also be knowingly issuing shares they know are overvalued (see, Lee, 1997).

Previous research has accumulated evidence of insider trading around equity issues.²⁷ This evidence can be highlighted in three categories: (i) Evidence of significant abnormal insider trading around equity offering (Karpoff and Lee, 1991; and Gambola, Lee and Liu, 1997). (ii) Evidence that the abnormal insider trading is associated with the announcement period abnormal

effects. Karpoff and Lee (1991) define insiders as officers, directors, and owners of more than 10% of the company.

²⁷ See also John and Mishra (1990), Sivakumar and Waymire (1994), for a further discussion of insider trading and announcement day returns around capital expenditures and quarterly earning announcements, respectively.

returns (Johnson, Serrano and Thompson, 1996; Lee, 1997; and Kahle 2000).
(iii) Evidence that abnormal insider trading is associated with the long-run underperformance (Lee, 1997; and Kahle, 2000).

Karpoff and Lee (1991) find significant abnormal insider selling prior to SEOs and convertible debt announcements. Gambola *et al.* (1997) find significant abnormal net insider selling that is concentrated in the month immediately following the announcement of seasoned equity offerings, which also continues substantially for several additional months. Their evidence also shows that the net abnormal insider selling is more for growth firm than for mature firms, and holds across different specifications of both the measures of insider trading and measures of abnormal selling. Together the evidence suggests that insiders have access to private information, and that the expected gains from insider trading exceed the expected costs of any prospective market and legal penalties. In addition, Gambola *et al.* suggests that insiders may delay a significant amount of trading to avoid the legal and market penalties and that growth firms have greater degree of overpricing than mature firms. Kahle (2000) also shows evidence of significant increases (decreases) in the number of insider sales (purchases) prior to the new issues of equity and convertible debts even after controlling for pre-issue price run-ups.

Johnson *et al.* (1996) argue that if corporate insiders know more about the expected effect of future investment than others do, the value and direction of personal trading by insiders should reflect their expectation of the future value of the firms. They find evidence of less negative stock price reaction for equity issue announcements that are preceded by insider buying than for equity issue announcements preceded by insider selling. However, Lee (1997) and Kahle (2000) find that the announcement effect does not vary reliably with different trading patterns by top executives.

Lee (1997) shows that among equity issuers in which at least 50% of the shares sold are secondary, issuers in which insiders are pure sellers perform (relative to their matched firm benchmarks) significantly worse than firms in which insiders are pure purchasers, over the three-year holding period. Lee suggests that his results are consistent with the notion that issuers whose top executives sell their shares before the issue seem to know they are selling

overvalued equity. Kahle (2000) presents evidence that the long-run performance (measured against size and market-to-book ratio matched firms) is negatively related to insiders selling and positively related to insiders buying for the industrial equity issuers, over the three-years holding period.

3.4 Sustainability of the Long-run Abnormal Returns

The persistence of the evidence of long-run stock underperformance following not only equity issues but also announcements of other corporate events, supported by strong evidence of operating performance, raises debate especially in relation to the long-standing notion of market efficiency. As a result, substantial research effort has been directed towards ascertaining the sustainability of this evidence.

Several studies have argue that issuers are shown to underperform significantly due to one or a combination of the following reasons: (i) Differences in the robustness of the models of abnormal performance, i.e., the use of CARs, BHARs, or the calendar time techniques such as the Fama and French's (1993) Three-Factor model. (ii) Potential biases in the benchmarks; e.g., the use of a broad market index as a reference portfolio or control firms, individually against individual event firms or as a portfolio. (iii) Misspecification of the test statistics; use of normal parametric tests, assuming dependence, independence or adopting techniques that adjust for the skewness in buy-and-hold abnormal returns. Some of these issues will be discussed in the next chapter. Some studies suggest that an announcement of equity issue is a non-event in the post-offering period, and therefore, the issuer's underperformance is attributable to certain firm and issue characteristics. This argument is the main reason for cross-sectional investigation to find whether some of these factors have potential explanatory power to explain why some of the issuers underperform and other do not.

Under the efficient market hypothesis, the markets are at least semi strong efficient; information is rapidly incorporated into share prices such that there are no real possibilities of earning excess returns from trading strategies. Fama (1998) argues that the reported anomalies are chance results, where, the apparent overreaction is about as common as underreaction, and the post-event

continuation of pre-event abnormal returns is about as frequent as post-event reversals. As a result, they cannot be used as evidence against market efficiency. Based on the recent studies that have shown negligible or no evidence of long-run abnormal returns (Brav and Gompas, 1997; Mitchell and Stafford, 2000; etc), Fama concludes that the anomalies suffer from methodological problems covering the bad model problems and the test specification.

These arguments have been tested and evaluated (see, for example, Barber and Lyon, 1997; Brown and Warner, 1997; Loughran and Ritter, 1999). Jegadeesh (2000) is another study that uses a variety of benchmarks and specifications of tests statistics. Many of these studies still report significant underperformance. The magnitude and persistence of this underperformance raise questions whether the underperformance can really be attributed to chance as Fama (1998) claims. Fama (1998) and Mitchell and Stafford (2000) advocate the use of calendar time approach as in Fama and French's (1993) model, arguing that such models can eliminate the underperformance. However, several studies have applied them and still report evidence of significant underperformance (see, for example, Loughran and Ritter, 1995). This raises another question whether the studies that use the multi factor models and report the disappearance of the significance of underperformance thanks to well specified benchmarks (see for example, Eckbo *et al.*, 2000; Abhyankar and Ho, 2001) do not suffer from other problems of their own. For example, Jegadeesh (2000:28) observes that the matched firms in Eckbo's *et al.* study do not exclude IPO firms, and empirically shows that the inclusion IPOs in the benchmark significantly understates the level of underperformance. The 5-year return on the equally weighted index without new issues is on average 30.5% larger than on the index with new issues. This result supports the earlier findings in Barber and Lyon (1997), Loughran and Ritter (2000). The evidence that new issues underperform in the long run is not scarce at all; Ritter, (1991), Levis (1993), to mention but a few.

Another important observation in the literature is about the generality of this evidence across world markets. While major research developments are concentrated on the US market, calls have been made e.g. Fama and French

(1998) that it would be useful to investigate whether the patterns in security returns in the US hold in other countries to ensure that such patterns are not the outcome of data mining. Since then, similar patterns have been reported not only in SEOs returns but also in other corporate events and decisions. Despite of the size and the relative importance of the UK in the world of finance, in addition to the dominance of rights issues, relatively very little is known about the long-term performance of the issuers. Examination of security return patterns in the UK is expected to add to the understanding of this important anomaly.

3.5 Summary and Conclusions

In this chapter, we summarised the key research that report evidence of significant underperformance following seasoned equity offerings (SEO). The empirical literature shows that SEOs suffer poor long-run stock returns measured against various benchmarks as well as the multi-factor models. Very few, and recent research articles show the disappearance of underperformance. A similar trend is found in both public and rights issues. Both follow periods of contracted stock returns, suffer negative stock price reaction, and yield positive abnormal returns in the first one or two months after the issue, after which the abnormal returns become increasingly negative. Although the authors of these recent articles attribute these results to better model, benchmark and test specification, the literature cautions that these improved methods may still suffer from other problems and therefore need to be carefully interpreted.

Various hypotheses have been developed and tested to assess whether they can explain the reported underperformance. Examples include; the overvaluation exploitation, underreaction, investors' optimism, earnings management and insider trading hypotheses. While the overvaluation exploitation may not be significant in explaining the underperformance following rights issues as it requires shares to be issued to external shareholders, the rest apply to all equity issues.

While much has been done on the US market, little has been done for the UK market. Only Michailides (2000) examines the overvaluation exploitation by comparing performance of issuers during hot market against that of issuers

during cold market but find no supporting evidence. Moreover, while majority of the studies in the UK study post-offering periods shorter than five years, none examines the possibility that the underperformance may also be associated with firm- and issue-specific factors rather than just the hypotheses suggested.

The relative size of the UK market in the world financial market and its domination of rights issues, make investigation of the performance of UK equity issuers important and the resulting evidence should add a significant contribution to our knowledge of this important anomaly.

Table 3.1 Equity offerings and long-run abnormal returns

This table summarises the empirical paper that report average buy-and-hold abnormal returns, wealth relatives (in brackets) and cumulative average abnormal returns (in parenthesis).

Author(s)	Sample (Period)	Benchmarks	1-Year	3-Year	5-Year
Panel A: Public offerings					
Loughran and Ritter (1995) ^a	3702 SEOs (1970-1990) AMEX/NYSE/NASDAQ	Size matched portfolios E-W		-33 [0.78]	-59.2 [0.69]
Spies and Afleck-Graves (1995)	1247 SEOs (1975-1989) AMEX/NYSE/NASDAQ	Size and industry		-22.84 [0.85]	-42.39 [0.79]
		Size	(-4.3)	(-18.67)	(-31.24)
		Size and book-to-market	(-5.0)	(-23.15)	(-39.36)
			(-2.29)	(-17.51)	(-30.99)
Jegadeesh (2000) ^b	2992 US SEOs (1970-1993)	Size portfolio			-47.5
		Size and MTBV portfolio			-34.3
		Size & Earnings-to-price			-39.6
		Size & pre-issue M(-6,-1) returns			-48.5
Eckbo <i>et al.</i> (2000)	3851 ind.SEOs (1964-1995) NYSE/AMEX/NASDAQ	Size EW			-26.9
		Size VW			-21.1
		Size and book-to-market EW			-23.2
		Size and book-to-market VW			-10.6
Brav <i>et al.</i> (2000)	4526 US SEOs (1975-1992)	Size and book-to-market EW			-27.3
					[0.85]
					(-15.4)
					-23.8
					[0.88]
					(-17.1)
Cai and Loughran (1998) ^c	1383 SEOs (1977-1992) in Japan	Size	-6.4 [0.95]	-17.8 [0.88]	-38.8 [0.82]
		Size and book-to-market	-5.7 [0.95]	-11.6 [0.92]	-29.1 [0.80]
Kang <i>et al.</i> (1999)	727 Japanese public issues (1980-1988)	Size		-22.1	-74.06
		Size and market-to-book		-14.69	-69.41

Panel B: Rights issues

Marsh (1979) ^d	1145 UK rights issues (1962-1975)	FT-adjusted Industry matched portfolio (VW) Industry matched portfolio (EW) Size matched portfolio	(10.9) (6.5) (-2.4) (2.3)	(5.8) (7.4) (-6.3) (-2.2)
Levis (1995) ^e	158 UK re-issuing IPOs by rights issues(1981-1991)	FTA HGSC Size decile portfolio	(-8.76) (-4.78) (-7.72)	(-18.19) (-11.21) (-15.10)
Michailides (2000)	1127 UK rights issues (1975-1996)	Industry and MTBV (Hot) Industry and MTBV (cold) Industry and size (Hot) Industry and size (Cold) Size matched portfolio	0.06 -4.46 -0.20 -2.98	-9.03 -2.47 -4.27 -8.74 -15.0
Suzuki (2000) ^f	694 UK rights issues (1991-1996)			
Abhyankar and Ho (2001)	670 rights issues (1989- 1997)	Size matched portfolio (EW) Size matched portfolio (EW) Industry & book-to-market (EW) Industry & book-to-market (VW) Size & book-to-market (EW) Size & book-to-market (VW)		19.50 -8.53 -17.62 -15.69 -18.26 -19.92
Cai (1998) ^g	260 Japanese rights issues (1971-1990)	Size Size and maket-to-book	-18.1 [0.87] -8.6 [0.94]	-33.4 [0.87] -22.8 [0.91]
Kang <i>et al.</i> (1999)	51 Japanese rights issues (1980-1988)	Size Size and maket-to-book		-10.29 -2.47 -47.37 -18.16

Dubois and Jeanneret (2000)	249 Swiss rights issues(1982-1997)	EW portfolio	-1.77 (-1.46)	2.85 (1.60)
		VW portfolio	-1.96 (-2.15)	1.60 (3.03)

^a Also significantly underperformed against CSRP AMEX-NYSE (EW, VW), S&P 500, CRSP NASDAQ (EW, VW).

^b Also significantly underperformed EW, VW portfolios, previous 36 month returns and all characteristics controlled benchmarks.

^c Also significantly underperformed TSE EW, Industry EW, market-to-book matched, book assets and industry matched.

^d 12 and 24 months after the issue only.

^e 12 and 18 months only.

^f Only 24 months after the issue.

^g Also significantly underperformed market-to-book and book assets and industry matched.

^h Four-year period after the offering.

CHAPTER FOUR

DATA AND METHODOLOGY

4.1 Introduction

This chapter describes the data sources and methodologies used in event studies, for both short- and long-run horizons. The data sources are generally described here, but each empirical chapter will give a short description of the relevant sources as appropriate. The early studies examining the long-run abnormal returns are based on the extension of the classic event study methodology, the Cumulative Average Abnormal Returns (CAR), which was originally designed to analyse relatively very short horizon events. In recent years, research on long-run abnormal returns has increasingly used the buy-and-hold abnormal returns (BHARs) model as well as the Fama-French's (1993) three-factor model and its extensions. The CARs and BHARs are both methods of cumulating returns over a specified measurement period. The main difference between them is that while in the CARs period t 's abnormal returns are cumulatively summed over holding period with periodic rebalancing, in the BHARs the returns are compounded over the holding period without rebalancing. On the other hand, the Fama-French's (1993) three-factor model is an asset-pricing model, which is used in a fashion similar to the Jensen's alpha.

The implementation of the CAR and BHAR models requires a measure of expected (normal) returns as well as a test of the significance of the abnormal returns generated by the models. The finance literature shows that in measuring expected returns a variety of models have been in use, varying from the use of asset-pricing models to the use of a reference portfolio. The reference portfolio can be either a carefully constructed portfolio e.g., a portfolio of firms matched to the sample firm based of firm characteristics known to affect cross-sectional average returns or simply a broad market index such as the FT All Share Price index. In addition, there is an increasing use of return of a control firm matched to the sample firm in a similar fashion, to proxy for a measure of expected return. Various asset-pricing models such as the CAPM and the Fama-French (1993) three-factor model can also be used to generate the

expected returns for the abnormal return models. The use of the Fama-French's (1993) three-factor model as a measure of performance requires an estimation of the three factors while its use as a benchmark return generator requires also an estimation of the regression parameters in the estimation window. The parameters will then be used in the event window in a similar fashion as the implantation of the market model. The tests of the significance of the abnormal returns have also been developed and refined in difference ways with the view of controlling for known problems in the distribution of the parameters of interest, e.g. adjusting for skewness.

Therefore, in addition to describing the data sources used, this chapter also attempts to describe and discuss the models for measuring abnormal returns. It then describes the most commonly used models of expected returns. The tests of the significant of the abnormal returns are also covered. Finally, the chapter discusses various issues involved in the choice of one method over the other. It is important to note that although a substantial research effort has been directed towards these issues, there is no consensus, as to which model, which benchmark, or which test statistics, consistently produces robust results. In practice, many studies have used a combination of models as the case allows and compared the sensitivity of the estimated abnormal returns to different model specifications. Following the empirical based recommendations in the previous studies, Ritter (1991), Conrad and Kraul (1993), Barber and Lyon (1997), Kothari and Warner (1997), the study adopts the buy-and-hold abnormal return (BHARs), return on individually matched firms, and a combination of both parametric and nonparametric tests, for the measure of abnormal returns, expected returns and significance tests, respectively.

The rest of the chapter is organised as follows. Section 4.2 describes the data sources. Section 4.3 is devoted to the description of the models of abnormal returns whereas Section 4.4 describes measures of expected returns. Section 4.5 discusses various tests for the abnormal performance as well as comparative tests. Section 4.6 discusses the methods adopted for this study while Section 4.7 provides summary and conclusions.

4.2 Data Sources

The primary source of the UK rights issues data is the *Rights Issues Diary* file available on the *Datastream*. The file provides annually, a summary of rights issue details including the company name (historical), announcement dates, amount raised, and the terms of offer. In total, 1399 rights issue announcements recorded on the *DataStream* over the sample period 1986-1995, were drawn from the file. Over the same period, the file also provides information on the planned use of the funds raised. In addition, the *DataStream* was the source for the daily returns as well as the market and accounting information used in the study.

Supplementary sources of data include the *Extel Financial* database and publications, *KPMG Peat Marwick McLintock New Issue Statistics* publications, and volumes of the stock exchange publications such as the *Stock Exchange Official Yearbooks* (years 1985 to 2001) and the *Quality of Markets Review* (various editions). The *Extel* Database, *Extel* publications and the *Stock Exchange Yearbooks* were used to obtain the issuing month, company's name change history, and to determine the potential matching firms. The KPMG publications together with the *Stock Exchange Yearbooks* and the *NEW* file on the *DataStream* were used to identify the "young" firms in the sample. *Stock Exchange Yearbooks* and the *DataStream* were also used to classify issuers in industrial sectors.

4.3 Models of Abnormal Returns

Any study of abnormal return requires a consistent measure of return on the event security, a model of abnormal returns, a measure of expected or normal returns (benchmarks), and a test of the significance of abnormal returns. Reliability of the conclusions drawn from the results depends on how good these measures are in providing an unbiased assessment. Previous studies that analyse effects of corporate decisions on shareholders' wealth (e.g. equity issue decision) use the classic event study methodology, in which the abnormal returns are calculated against returns generated by some form of return generating process such as a asset pricing model (e.g. CAPM) or simply the

returns on a broad market index. The returns generated by these processes are used to proxy for normal returns, which would have been expected in absence of the event under consideration. The abnormal returns are then cumulated over the event period, normally a very short horizon.

From the early 1990s, a substantial research effort has been directed towards examining the long-run shareholders' wealth effects of such corporate decisions. However, in many of these studies the long-run abnormal returns are based on a direct adaptation of the classical event study methodology by cumulating the abnormal returns over a period longer than one for which the methodology was designed. Research in recent years indicates an increasing usage of the buy-and-hold abnormal returns (BHARs) model as well as asset pricing models such as the Fama-French's (1993) three-factor model.

This section describes the three most commonly used models of measuring long-run abnormal returns: the cumulative average abnormal returns (CARs) model, the buy-and-hold abnormal returns (BHARs) model, and the Fama and French's (1993) Three-factor model. The issues involved in the choice, amongst them, of a model to apply in a given study will be highlighted later in Section 4.6.

4.3.1 The cumulative abnormal returns (CARs) model

The description of this model benefits from the earlier works by Brown and Warner (1980, 1985), Strong (1992), Thompson (1995), to mention, but a few. In the CARs model, security j 's abnormal performance in period t , $AR_{j,t}$, is computed as:

$$AR_{j,t} = R_{j,t} - E(R_{j,t}) \quad (4.1)$$

where, $R_{j,t}$ is the event security's realised return in period t and $E(R_{j,t})$ is the expected (or normal) return corresponding to period t . For a portfolio of N securities, the average abnormal return in period t , AAR_t , is computed as the equally weighted arithmetic average of the abnormal returns:

$$AAR_t = \frac{1}{N} \sum_{j=1}^N AR_{j,t} \quad (4.2)$$

where N is the number of securities. The average returns, AAR_t 's, are then cumulated over the event window, or testing period (τ, T) , to yield cumulated average abnormal returns, $CAR_{\tau, T}$:

$$CAR_{\tau, T} = \sum_{t=\tau}^T AAR_t \quad (4.3)$$

When used for short horizon studies, cumulating the average abnormal returns is crucial to capture the full effect of the event on share prices and to accommodate the uncertainty over the exact date of the announcement, or rather the time when the market really learned about the event.

It is important to note that this is the classic event study methodology where the event horizon was designed to be as short as possible to measure the impact of the announcement of firm-specific events on the price of the shares of the event security. The major concern was to assess the extent to which security returns around the time of the event deviate from the expected returns. If the markets were rational and efficient, the information contents of the event would be reflected into the expected security price rapidly and correctly, making the abnormal returns indistinguishable from zero. The event study, therefore, provides a way of testing not only for the effects of a particular event but also for the efficiency of a particular stock market. Application of the model further requires defining the estimation and event windows, measuring the expected return and choosing a technique to assess the significance of both the average abnormal returns and the cumulative abnormal returns. These are discussed later in Sections 4.4 and 4.5, respectively.

To use this model for long-run abnormal returns, the time t 's abnormal returns are cumulatively summed over the period (τ, T) , which runs from the day of offering to the earlier of either the security's T -period anniversary or when the security is delisted. Moreover, the problems of using the CARs model for long-run performance are highlighted later in Section 4.6.

4.3.2 The buy-and-hold abnormal return (BHARs) model

In the BHAR model, the abnormal returns are computed as the difference between the buy-and-hold return on the event security and the expected

(normal) buy-and-hold return. The model differs from the CARs model mainly in the way the long-run returns are accumulated. In the CARs model, the average abnormal returns are summed cumulatively over the holding period, implying periodic rebalancing. In the BHARs model, the realised period t returns of the individual, or the portfolio of, event securities are compounded over the holding period. The same is done for the expected returns, proxied by the returns, in the corresponding period t , on the benchmark security, reference portfolio or any other appropriate return generating process.

Defining (τ, T) as the holding period, the buy-and-hold return (BHR) on security j over the holding period is given by:

$$BHR_{j,\tau,T} = \left[\prod_{t=\tau}^{\min[T, delist]} (1 + R_{j,t}) - 1 \right] \times 100\% \quad (4.4)$$

where, $R_{j,t}$ is the raw return on security j in time period t and $Min(T, delist)$ is the earlier of either the T -year anniversary or the delisting date of security j . Similarly, the expected buy-and-hold return over a corresponding period is calculated as:

$$E(BHR_{j,\tau,T}) = \left[\prod_{t=\tau}^{\min[T, delist]} (1 + E(R_{j,t})) - 1 \right] \times 100\% \quad (4.5)$$

where, $E(R_{j,t})$ is the expected or normal return for the event security. The buy-and-hold abnormal return (BHAR) on security j over the holding period is the difference between buy-and-hold return (BHR) of the event security and the expected buy-and-hold return, $E(BHR)$:

$$BHAR_{j,\tau,T} = \prod_{t=\tau}^{\min[T, delist]} (1 + R_{j,t}) - \prod_{t=\tau}^{\min[T, delist]} (1 + E(R_{j,t})) \quad (4.6)$$

The average buy-and-hold return, $ABHAR_T$, for N securities over the holding period is calculated as:

$$ABHAR_T = \frac{1}{N} \sum_{j=1}^N BHAR_{(j,\tau,T)} \quad (4.7)$$

4.3.3 The Fama-French's (1993) three-factor model

Various factors have been shown to influence the cross-section of average stock returns. Fama and French (1992), for example, study the role of market beta, size, earnings/price (E/P) ratio, leverage, and book-to-market ratios in explaining cross-section of average stock returns, and report that when used in combination, size and book-to-market ratio do well in explaining cross-section of average common stock returns on NYSE, AMEX and NASDAQ stocks in the period 1963-1990. Strong and Xu (1997) and Guidi and Davies (1999) report a similar evidence for the UK stock returns.

Fama and French (1993) extend the analysis to cover bond returns, and develop the 'Three-Factor Model', that explains the relationship between common stock returns and the market risk premium, size, and book-to-market ratio factors. For the event security j , the excess returns are regressed on the three factors known to affect cross-sectional returns:

$$R_{j,t} - R_{f,t} = \alpha_j + \beta_j(R_{m,t} - R_{f,t}) + s_jSMB_t + h_jHML_t + \varepsilon_{j,t} \quad (4.8)$$

where, $R_{j,t}$ is the simple monthly return on event security j . The α_j, β_j, s_j , and h_j , are the regression parameters and $\varepsilon_{j,t}$ is the error term. $R_{j,t} - R_{f,t}$ and $R_{m,t} - R_{f,t}$ are, respectively, the post-event monthly excess return on the event security and the market factor, where $R_{m,t}$ is the raw return on a broadly based market portfolio e.g. the value weighted FT ALL Share Price index and $R_{f,t}$ is the one-, or three-month Treasury Bill rate. The size factor, SMB_t , is defined as the difference between return on a portfolio of small firms and return on a portfolio of big firms. The book-to-market factor, HML_t , is defined as the difference between the return on a portfolio of highest book-to-market ratio firms and the return on a portfolio of the lowest book-to-market ratio firms. For the computation of the SMB and HML variables see Fama and French (1993).

The regression can use, as dependent variable, either: (i) the portfolio excess return $(R_{p,t} - R_{f,t})$ (Spiess and Affleck-Graves, 1999), (ii) the difference in returns between a portfolio of event securities and a portfolio of non-event

securities (Loughran and Ritter, 1995), or (iii) the simple event security's return less risk free rate (Barber and Lyon, 1997).

Recently, there has been a variation in the model. For example the inclusion of a momentum factor, hence the Carhart's (1997) Four-Factor model. The momentum factor is defined as the difference in return on an equally weighted portfolio of high momentum (winners) stocks and the low momentum (losers) stocks. This model is used in, for example, such studies as Brav, *et al.* (2000), Jegadeesh (2000) and Abhyankar and Ho (2001)

The Fama-French's (1993) three-factor model and its variation can be used in, at least two different fronts. First, it can be used as a performance measure, in which case the intercept α_j is the parameter of interest. For a sample of N securities, N regressions are estimated one for each sample security. The regression intercepts, $\alpha_{j,s}$ are averaged across the N securities and a parametric test is calculated as $(\bar{\alpha}/\sigma_\alpha)\sqrt{n}$ where σ_α is the cross-sectional sample standard deviation of the intercept terms. The null hypothesis of monthly $\bar{\alpha} = 0$ is tested. This application is consequently equivalent to the tests based on CARs of BHARs (Fama, 1998). An $\alpha_j > 0$ indicates that after controlling for the market, size, and book-to-market factors in returns, the event security performed better than expected. Hence, its application in this fashion is likened to the use of the Jensen's Alpha. Second, the model can be used as a measure of expected return in a fashion similar to the use of other asset-pricing models such as CAPM (see, for example, section 4.4.1.3).

The use of Fama-French model alleviates the pre-event data requirement problem in other models as the estimates of the model's variables uses portfolio of listed companies. This improves the sample size. The model also is renowned for its control for risk. However, there are several concerns that must be taken into account. First, as it was for the use of the broad market index, the estimation process for the model's factors may be contaminated by both the new issues as well as the SEOs, which Loughran and Ritter (2000: 378) argue that they will bias the three-factor model towards finding zero abnormal returns. Second, there is the weighting metrics. Loughran and Ritter (2000) provide

examples of circumstances under which each should be used leading to Fama (1998) to conclude that the weighting scheme should be determined by the economic hypothesis of interest. Third, the use of the three-factor model as a return generator for expected returns requires the researcher to estimate the regression parameters based on pre event data similar to the implementation of the market model. The estimated parameters will then be used with the factors in the event window. This poses a problem of pre-event data requirement. It also assumes that the estimated coefficient on size and book-to-market are stable over time. This may lead to sample size reduction and introduction of noise in the analysis of long run abnormal return (Barber and Lyon 1997: 356). Fifth is the interpretation of the results in relation to the notion of market efficiency. Recent studies have used the model to measure long-run abnormal returns (Mitchell and Stafford, 2000; Eckbo *et al.*, 2000; Abhyankar and Ho, 2001). Loughran and Ritter (2000) argue that the interpretation of the evidence based on the multi-factor regression results as evidence in support or against market efficiency is unsafe because rather than testing market efficiency, the time series regressions are just tests of whether a given pattern in returns is independent of other previously documented patterns in returns.

4.3.4 Other forms of performance measure

Many studies investigating long-run abnormal returns have also used the wealth relative measure (WR) and the fraction of underperformance. The wealth relative is defined as the ratio of the end-of-the period wealth from holding a portfolio of event securities to the expected end-of-period wealth. It is therefore, the ratio of one plus the mean buy-and-hold return on the event security to one plus the mean of the expected buy-and-hold return:²⁸

$$WR = \frac{1 + \frac{1}{N} \sum_{j=1}^N \left(\prod_{t=\tau}^T (1 + R_{j,t}) - 1 \right)}{1 + \frac{1}{N} \sum_{j=1}^N \left(\prod_{t=\tau}^T (1 + E(R_{j,t})) - 1 \right)}$$

this reduces to:

²⁸ The wealth relative is a ratio of the average gross returns rather than the average of the ratios.

$$WR_T = \frac{\sum(1 + BHR_T)}{\sum(1 + E(BHR_T))} \quad (4.9)$$

The wealth relative measure is very useful in interpreting the long-run performance. For example, according to Ritter (1991) a $WR > 1.00$ indicates that the event security performed above expectations (outperformed) whereas a $WR < 1.00$ indicates that the event security performed below expectations (underperformed). See also, Levis (1995), Loughran and Ritter (1995), Spiess and Affleck-Graves (1995), Cai (1998), Cai and Loughran (1998).

The fraction of underperformance is the fraction of the sample of event securities whose buy-and-hold return is less than the expected buy-and-hold return (Spiess and Affleck-Graves, 1995; Cai, 1998; and Cai and Loughran, 1998). The fraction of underperformance is particularly important if the normality assumption is not quite satisfied, resulting into part of the underperformance being explained by a few outliers, in which case the fraction of underperformance will be indistinguishable from 50%.

4.4 Measures of Expected Returns

Since a security's abnormal return can only be assessed relative to a particular benchmark, the models described in the previous section, particularly the CARs and BHARs models, require a measure of expected (or normal) performance. The measure of expected return provides returns that investors would expect to earn from a similar investment but in a non-event situation. Such measures are described here in two categories: the asset-pricing model-based measures and those based on matched procedures.

4.4.1 Asset-pricing model-based measures

This section describes the most commonly used models for generating *ex ante* expected returns in event studies based on the works of, for example, Brown and Warner (1980, 1985), and Strong (1992). The return generating processes can be grouped in five groups: (i) Constant Expected Return, (ii) Market Adjusted Returns, (iii) Market and Risk Adjusted Returns, (iv) Matched/control firm portfolio, and (v) Market model.

4.4.1.1 *The Constant Expected Return (CER)*

The CER Model assumes that the mean return of a given security j is constant over time and, therefore, the security's *ex ante* expected return in the absence of information is equal to a constant, K_j , for all time periods t , although the constant can vary across securities.

$$E(R_{j,t}) = K_j \quad (4.10)$$

The CER model is consistent with the Capital Asset Pricing Model (CAPM) under the assumptions that interest rates, risk premium, and the security's risk are constant over time. Substituting 4.10 into 4.1, the abnormal return becomes:

$$AR_{j,t} = R_{j,t} - K_j \quad (4.11)$$

Application of the model focuses on the return on each sample security around the event to examine whether these returns are statistically different from the returns predicted by this return generating process, K_j , where both K_j and its standard deviation are estimated from the event security's historical return data over the estimation window. The standard deviation estimate is used to standardise the abnormal returns.

4.4.1.2 *The Market Adjusted Returns (MAR)*

The MAR Model assumes that *ex ante* expected returns are the same for all securities (although not necessarily constant for a given security) and therefore equal in any period to the expected market return. Since the market portfolio of risky assets M is a linear combination of all securities, it follows that for any security j :

$$E(R_{j,t}) = E(R_{m,t}) = R_{m,t} \quad (4.12)$$

Substituting 4.12 into 4.1, the *ex post* abnormal return on security j in period t that is conditioned on the realisation of the market return in period t , is computed as:

$$AR_{j,t} = R_{j,t} - R_{m,t} \quad (4.13)$$

The MAR model is also consistent with the CAPM if all securities have systematic risk of unity. However, for the average to be zero it only requires the average beta to be unity. Unlike the CER model, the MAR model takes into account the market-wide movements, which occurred at the same time that the sample security experienced the event.

4.4.1.3 *The Market and Risk Adjusted Return Model (MRAR)*

The MRAR model presumes that some version of the CAPM generates the expected returns. It controls for, not only the general market movements, but also the security's risk. For any security j the *ex ante* expected return in period t is given as:

$$E(R_{j,t}) = E(R_{f,t}) + \beta_j (E(R_{m,t}) - E(R_{f,t})), \quad (4.14)$$

which can be re-arranged as:

$$E(R_{j,t}) = (1 - \beta_j)E(R_{f,t}) + \beta_j E(R_{m,t}) \quad (4.15)$$

where, $R_{f,t}$ is the return on a risk free security in period t (normally the return on Treasury Bills) and β_j is the systematic risk of security j relative to the market index, which must first be estimated from the security j 's historical return data. Substituting 4.15 into 4.1, the predicted abnormal return is given by:

$$AR_{j,t} = R_{j,t} - (1 - \beta_j)E(R_{f,t}) - \beta_j E(R_{m,t}). \quad (4.15)$$

This would collapse to the CER model, equation 4.11, if the security's return is constant and if $R_{f,t}$ and $R_{m,t}$ are constant over time. It would collapse to the MAR model, equation 4.13, if all securities have the same systematic risk as the market.

In each of the three models, the return that will be realised on security j in period t , $R_{j,t}$ is given by:

$$R_{j,t} = K_{j,t} + \varepsilon_{j,t} \quad (4.16)$$

where $K_{j,t}$ is the expected return given by a particular model and $\varepsilon_{j,t}$, unknown at the beginning of period t , is the abnormal or unexpected component $AR_{j,t}$.

4.4.1.4 *The Matched or Control portfolio model (CPM)*

The CPM, also known as the *difference in returns* benchmark, controls a security's return for its systematic risk against the market. The event securities are formed into a portfolio e.g., p . A second portfolio, q , is drawn independent of the event of interest, or in some cases based on securities not experiencing the event being studied. The portfolios are then weighted to have the same estimated β value, often constrained to unity. The abnormal return is the difference between the returns on portfolios p and q :

$$AR_t = R_{p,t} - R_{q,t} \quad (4.17)$$

A slight variant of this model calculates abnormal returns for individual securities as the difference between actual security's return and the return on a reference portfolio of securities in the same beta risk decile (Vermaelen, 1981). In another example, abnormal return is calculated as the difference between actual security's return and the return on a reference portfolio of non-event securities in the same industry sector as the event security (Marsh, 1979).

4.4.1.5 *The Market Model (MM)*

The MM model is the most popularly applied method in event studies, probably because it makes no explicit assumption about how equilibrium security prices are established. In addition, it generally results in smaller variances of abnormal returns, relative to raw returns, leading to more powerful statistical tests and that it produces smaller correlations across securities' abnormal returns, giving closer conformity to standard statistical tests (Beaver, 1981). It assumes that the returns are generated in the following form:

$$R_{j,t} = \alpha_j + \beta_j R_{m,t} + u_{j,t} \quad (4.18)$$

where $u_{j,t}$ is a zero mean, independent disturbance term in period t . The model essentially partitions $R_{j,t}$ into a systematic component linearly related to $R_{m,t}$

and unsystematic component, $u_{j,t}$ which is uncorrelated with $R_{m,t}$. Since it is assumed that the information signal and $R_{m,t}$ are independent, the unsystematic component is meant to capture fully the effect of firm specific events. Application of the model requires an estimation of the ordinary least squares parameters over the estimation window by regressing each event security's returns on the return on the market portfolio. The resulting residuals in each event time for each security are the measures of abnormal performance, $u_{j,t}$. Substituting 4.18 into 4.1,

$$AR_{j,t} = \mu_{j,t} = R_{j,t} - \hat{\alpha}_j - \hat{\beta}_j R_{m,t} \quad (4.19)$$

To examine the significance of the abnormal performance, the average MM residuals across the event window are used.

In all these models, a number of issues are worth noting. First, which model to use? The practicality of the assumptions under each model might be the main reason that the market model has been the most popular. However, Brown and Warner (1980), for example, evaluate the first three models and conclude that a simple methodology based on the market model performs well under a wide variety of conditions.²⁹ In some situations, even simpler methods, which do not explicitly adjust for market wide factors, or for risk, perform no worse than the market model. However, they warn that misuse of any of the methodology can result in false inferences about the presence of abnormal performance. Second, is the choice of estimation and event windows; i.e., how far from the event day, how long is the estimation window (also whether pre-event only or both pre- or post-event), and how long is the event window. Third is the choice of return interval (daily, weekly or monthly returns). See, Strong (1992) and Lo, Campbell and McKinley (1997) for further discussion on these issues, including Morse (1984) for the analysis of the effects of the choice of return intervals.

Because of the potential uncertainty about the time at which information actually reaches the market, the cumulative abnormal returns (CARs) testing is preferred to AAR testing in order to capture the effects that would be missed

²⁹ See also Marsh (1979: 843-4).

through leakage before the actual announcement date (see, for example, Fama *et al.*, 1969). An alternative is to compute an abnormal performance index (API) by compounding the period t abnormal returns over the event window (see, for example, Ball and Brown, 1968).

Moreover, as it was pointed out earlier in Section 4.3.3, other forms of asset-pricing models, such as the Fama-French's (1993) Three-factor model and its variations, can be used to generate the returns to proxy for expected returns.

4.4.2 Matching-based measures of expected returns

In addition to the asset-pricing based measures of expected returns, recent studies increasingly use the matching based-measures. For example, many of the early studies assessing the long-run abnormal returns used the broad market index as a measure of expected return. Fama (1998:294) points out that asset-pricing models like the CAPM and the ICAPM (Merton, 1973), commonly assume normally distributed returns and argues that normality is a better approximation for short horizons like a month than for longer horizons, where skewness becomes increasingly important. On the other hand, benchmark returns based on the market index have been shown to be biased (Barber and Lyon, 1997; Loughran and Ritter, 2000), due to new listing, rebalancing and skewness problems.

According to Barber and Lyon (1997), benchmarks can be carefully constructed to minimise the impact of the three sources of bias. For example, the new listing bias can be minimised by not using the market index, the rebalancing bias can be minimising by compounding returns rather than cumulatively summing.³⁰ Similarly, using returns of firms carefully matched to the sample firms according to some characteristics known to affect cross-sectional average returns can reduce the skewness bias. Once the control firms have been selected, their returns over the period of interest are used to proxy for the sample firms' expected returns. These can be used in both the CAR and BHAR models either in the portfolio context (e.g., Loughran and Ritter, 1995) or

³⁰ For an alternative view see Mitchell and Stafford (2000) and Gompers and Lerner (2003) who show that as a result of compounding, BHARs can grow with the return horizon even when there is no abnormal return after the first period, leading to false impression of the speed of price adjustment to an event

simply on a one-to-one match basis (e.g., Spiess and Affleck-Graves, 1995; Barber and Lyon, 1997; Cai, 1998).

This section describes the most commonly used criteria and procedure for choosing the control securities. The controlling firm approach helps in controlling the benchmark for the factors known to affect expected returns. In the process, the researcher also avoids picking event firms as well as newly listed firms, thus minimising the associated biases. This is rather a general description; the specificity of those adopted for this study will be described further in Chapter 5.

4.4.2.1 *Size-matched benchmark*

The performance of each event security is measured against a control security matched by size (market capitalisation), normally drawn at the year-end prior to the offering year, although some studies, for example, Kang *et al.* (1999) used market capitalisation at the month-end prior to the offering. To qualify for a matching, the security must have been listed on the exchange for at least five years (or three years depending on the performance measurement window) prior to the offering, a period within which they should not have experienced the event under consideration. For each event security in the sample, a security in the size ranked matching list with market capitalisation closest to, but higher than, that of the event security is chosen as its control security (or its benchmark). If the selected control security is delisted or subsequently experience the event before the end of the three (or five) year-period after the event date, a second, and if necessary a third or fourth matching security and so on in the original ranking, is spliced in on the day of delisting or of the event. A newly listed security becomes eligible for a matching security after any five-year period during which it has not experienced the event.

4.4.2.2 *Size and industry matched benchmark*

This process controls for both the firm size and industry effects in the performance measurement. At each year-end, all common stocks listed and traded on the exchange for at least three (five) years during which period they did not publicly experience the event are segmented by industry, and then

ranked by their pre-event year-end market capitalisation. For each event security in the sample, a security in the same industry as the event security and that has market capitalisation closest to, but higher than, that of the event security is chosen for a control security. If the event security has the highest market capitalisation in the industry, then the second largest security in that industry is chosen for a control security. If the matched security is delisted or experiences the event during the holding period, the next closest security by market capitalisation in the same industry is spliced in on the day of delisting or event. If a matched security in the same industry is not available, an alternative security is taken from a sector closest to that of the sample security, i.e. within the same economic group.

4.4.2.3 Size-and-book-to-market matched benchmark

In addition to size, Fama and French (1992, 1993) provide evidence of positive relationship between book-to-market ratios and security returns. Similar evidence for UK firms is provided in Strong and Xu (1997) and Guidi and Davies (1999). As a result, it has been recommended to use a benchmark that controls for both firm size and book-to-market ratios.

For each event security, a sub-list of securities is generated from the list of firms listed on the exchange such that the securities did not experience the event in the five years prior to the event year and have a market capitalisation within $\pm 30\%$ of the event security's market capitalisation. From this sub-list, a security with a book-to-market ratio that is closest but lower than the book-to-market ratio of the event security is chosen for a matching security. Alternatively, the sub-list could be prepared based on book-to-market ratio first then the matching security is chosen on size basis. Barber and Lyon (1997) evaluate the two approaches and conclude that although both work well in most sampling situations, the former yields test statistics that are well specified in virtually all sampling situations they considered.

4.4.2.4 Other matching approaches

Further studies have developed variations of these approaches in a bid to improve the reliability of the reported abnormal returns. See, for example,

matching by market-to-book ratio alone and by both book-assets and industry (Cai, 1998; Cai and Loughran, 1998). Another example is Jegadeesh (2000) who considers a matching procedure that also controls for earning-to-price ratio and lagged 6-month and 36-month returns.

4.5 The Significance of Abnormal Returns

4.5.1 Parametric tests

To assess the significance of the abnormal returns of the event securities relative to the expected or normal returns, a significance test is carried out for the *AARs*, *CARs*, and *ABHARs*. The *t-statistics* for the average abnormal return in period t across securities is given as:

$$t_{AAR} = \frac{AAR_t \cdot \sqrt{N}}{\sigma_{AAR}} \quad (4.20)$$

where, AAR_t is the average abnormal return in period t , N is the number of observation in period t , and σ_{AAR} is the cross-sectional standard deviation of the abnormal returns in period t . The test assumes an independently and identically distributed population; that is, the mean effect of the event is the same across securities. In some cases, there would be differences in variances of, and cross-correlation in, abnormal returns across securities. These have to be adjusted for to improve the power of the test (see, for example, Patell, 1976). The *t-statistics* for the cumulative average abnormal return in year t , $CAR_{t,T}$, is computed as;

$$t_{CAR_{t,T}} = \frac{CAR_{t,T} \cdot \sqrt{N}}{\sigma_t} \quad (4.21)$$

where, N is the number of observations in period t , and σ_t is computed as;

$(t \cdot var + 2(t-1)cov)^{\frac{1}{2}}$ where, t is the event year, var is the average T -year cross-sectional variance, and cov is the first order auto-covariance of the AAR_t terms.

The null hypothesis that the mean buy-and-hold abnormal return is equal to zero for a sample of N securities:

$$t_{ABHAR_T} = \frac{ABHAR_T \cdot \sqrt{N}}{\sigma_{BHAR}} \quad (4.22)$$

where, $ABHAR_T$, and $\sigma_{(BHARs)}$ are the mean and the cross-sectional standard deviation of the buy-and-hold abnormal returns for the sample of N securities.³¹

The fraction of underperformance estimated as the fraction of the sample with negative buy-and-hold abnormal returns, is tested for significance as:

$$z = \frac{\hat{p} - p}{\sqrt{p(1-p)/N}} \quad (4.23)$$

which is approximately normal for Np and $N(1-p)$ greater than 5. \hat{p} is the fraction of negative ABHARs estimated from the sample, p is 50%, and N is the number of observations.

4.5.2 Nonparametric tests

The test of the significance of the fraction of underperformance above is based on parametric tests. It may suffer from uncertainty in the normality assumptions and, therefore, requires a test based on location, a test unaffected by outliers in either positive or negative abnormal return. The test consequently serves as a check of robustness of the difference of means test. It determines whether the percentage of negative buy-and-hold abnormal returns is significantly different from the expected percentage of negative returns (in this case 50%).

$$z = \frac{(x - np)}{\sqrt{(1-p)np}} \quad (4.24)$$

where, x is the number of negative buy-and-hold abnormal return observations; p is the expected fraction of negative buy-and-hold abnormal returns (in this

³¹ If the sample is drawn randomly from a normal distribution, the test statistics follow a student's t -distribution under the null hypothesis. If BHAR is non-normal, the central limit theorem guarantees that if the measures of abnormal returns in the cross-section of firms are independent and identically distributed, drawn from finite variance distribution, the distribution of the mean abnormal return measure converges to normality as the number of firms in the sample increases (Barber and Lyon, 1997). However, this assumption has been challenged in the sense that the distributional properties and test statistics for BHARs are not well known (Gompers and Lerner, 2003).

case, 50%); and n is the total number of non-zero buy-and-hold abnormal return observations. This is referred to as the *simple binomial sign test*.

The sign test has one important limitation. It considers the sign of the difference but not its magnitude. Consequently, it is recommended to use the *Wilcoxon Signed Rank Sum Test*, a nonparametric counterpart of *t-test* of differences in means, which not only corrects the deficiencies in the sign test, but also takes into account the magnitude of the differences in buy-and-hold returns.

In a *Wilcoxon Signed Rank Sum test*, a z-statistics is computed for the hypothesis that the distributions of event security and non-event security buy-and-hold returns are identical. Denoting the difference in the buy-and-hold returns between event security j and its corresponding non-event security as D , the absolute values of D are ranked from 1 to N where 1 is the smallest value of $|D|$ and N is the largest value of $|D|$ and where N is the number of nonzero differences (tied observations are averaged). Letting T^- be the sum of the ranks of the negative differences and T^+ the sum of the ranks of the positive differences, T^- is arbitrarily selected as z-statistic and labelled as T . For relatively large sample sizes ($N \geq 30$), T is approximately normally distributed with mean:

$$E(T) = \frac{n(n+1)}{4}$$

and standard deviation,

$$\sigma_T = \sqrt{\frac{n(n+1)(2n+1)}{24}}$$

Thus the standardised test statistic is;

$$z = \frac{T - E(T)}{\sigma_T} \tag{4.25}$$

Under the null hypothesis that the event and non-event security's buy-and-hold returns are drawn from the same distribution, z follows a unit normal distribution. See also Keller and Warrack (1997: Chapter 13) and Loughran and Ritter (1997).

4.5.3 Comparative tests

The study will also explore different firm and issue characteristics to establish whether some of them have the potential of explaining why some of the sample firms underperform while others do not. To achieve this objective, the sample buy-and-hold return patterns are partitioned in quintiles (unless where stated otherwise) and depending on the hypothesis to be tested, two sub-samples are compared by testing the equality of the of the two population means. In other words, we are asking whether the two sample means could have come from identical populations, assuming that the sampled populations are independent and normal or approximately normally distributed.³²

$$t = \frac{ABHAR_1 - ABHAR_2}{\sqrt{\frac{S_{ABHAR_1}^2}{N_{ABHAR_1}} + \frac{S_{ABHAR_2}^2}{N_{ABHAR_2}}}} \quad (4.26)$$

with a degree of freedom:

$$d.f = \frac{\left(S_{ABHAR_1}^2 / N_{ABHAR_1} + S_{ABHAR_2}^2 / N_{ABHAR_2} \right)^2}{\left(\frac{\left(S_{ABHAR_1}^2 / N_{ABHAR_1} \right)^2}{N_{ABHAR_1} - 1} + \frac{\left(S_{ABHAR_2}^2 / N_{ABHAR_2} \right)^2}{N_{ABHAR_2} - 1} \right)}$$

4.6 Methodology Used in this Study

The methodology used in previous studies is mixed among the three models described above. This section discusses the choices of model of abnormal returns, measure of expected returns and significance test.

4.6.1 BHARs or CARs?

As pointed out earlier in Section 4.1, CARs and BHARs are both models of accumulating returns over a given period. The former involves periodic rebalancing of portfolio, which may affect the return to the investor due to the potentially high transaction costs associated with the rebalancing strategy. The

³² Because the variances of the two populations are unknown, the test uses variances estimated from the samples, unpooled. The difference between ABHAR₁ and ABHAR₂ is normally distributed if the populations are normal, the difference is also approximately normal if the populations are non-normal and the samples are large.

latter on the other hand, involves the compounding of the firm's returns without periodic rebalancing, thus minimising the potentially high transaction costs associated with the CARs model. It therefore, represents one of the basic investors' experiences, the buy-and-hold strategy, in which the investor takes a passive position by simply buying and holding the asset over the holding period.³³ Since the BHARs approach recognises the compounding ignored in CARs, it represents the wealth effect to investor in a more realistic way than CARs.

Barber and Lyon (1997) empirically show that the CARs (summed monthly abnormal returns) yield positively biased test statistics while the BHARs (compounded return on a sample firm less the compounded return on a reference portfolio) yield a negatively biased test statistics.³⁴ Ritter (1991) argues that testing of the null hypothesis that the 12-month CAR is zero is equivalent to testing the null hypothesis that the mean monthly abnormal return of the sample during the event year is equal to zero; it is not the same as testing the null hypothesis that the mean annual BHAR is equal to zero. As a result, Ritter recommends the use of BHARs instead of the CARs approach. Kothari and Warner (1997; p.304) recommend BHARs because the cumulating procedures in CARs lead to systematically positively biased abnormal returns due to bid-ask spread.

The study recognises the alternative arguments that favour the use of CARs over BHARs. For example, Fama (1998) and Mitchell and Stafford (2000),

³³ Another experience is for the investor to take an active portfolio management strategy by buying and holding a portfolio of assets while rebalancing periodically, selling of performing assets and buying the underperforming assets. This experience is reflected in the use of CAR, which is in this case considered limited for its potentially high transaction costs.

³⁴With the market portfolio, for example, the authors argue that if the event firms returns are more volatile than the returns on the market index it can be shown that the CARs will be greater than BHARs when BHARs are less than or equal to zero. The authors find that as the annual BHARs become increasingly positive, the difference between CARs and BHARs approaches zero and eventually becomes negative. Specifically, when the annual BHARs are less than approximately 13% the CARs are approximately 5% greater than the BHARs on average. However, the difference falls as BHARs level approaches 28%, beyond which point, the CARs are dramatically less than the BHARs. The authors attribute this pattern to the lack of compounding in CARs and conclude that CARs are bias estimators of long-run buy-and-hold abnormal returns. Consequently, they favour the use of BHARs in tests designed to detect long-run abnormal stock returns.

and Gompers and Lerner (2003), argue that it is better to use CARs rather than BHARs for the following reasons: (i) the BHARs approach can magnify underperformance – even if it occurs in only a single period – as a consequence of compounding single period return. (ii) the distributional properties and test statistics for CARs are better understood. These arguments imply that the choice between the two is not a clear-cut decision. However, Gompers and Lerner (2003) advise that the choice between the two approaches should largely depend upon the implicit trading strategy that is being assumed. The objective of this study is to assess the return to investors who buy-and-hold shares of the rights issuing firms, until either the T-anniversary or the issuers' delisting date. Consequently, the choice of BHARs over CARs here is also to reflect the assumed strategy. However, it is also important to point out that BHARs have other problems; e.g., they are normally positively skewed, a problem which Barber and Lyon (1997) say can be minimised if the control firms are chosen based on size and book-to-market ratios.

4.6.2 Measures of expected return

According to Barber and Lyon (1997), some of the problems of BHARs outlined in the previous section, especially the skewness problem, can be mitigated by an appropriate measure of expected returns.

The event securities' expected return is measured, in this study, as the return on a control firm, consistent to the recommendation in Barber and Lyon (1997). The authors argue that the use of a broad market index as a reference portfolio should be discouraged because of the biases it introduces to the abnormal performance. Both CARs and BHARs are positively biased due to *new listing*,³⁵ while the BHARs are negatively biased due to *portfolio rebalancing*,³⁶

³⁵ The event firms generally have a long post-event history of returns while the securities that constitute the market index typically include new firms that begin trading subsequent to the event date and become part of the market index. According to Barber and Lyon (1997) the inclusion of these newly listed firms in the market index and their exclusion from the potential sample in the initial event month causes the population mean CAR to depart from zero since the newly listed firms (IPOs) underperforms in the long-run (Ritter, 1991; Levis, 1995). Consequently, the market index return is likely to be negatively biased leading to positive biases on the population means for both CARs and BHARs. Conrad and Kaul (1993), also show that using the market portfolio induces a potential upward or downward bias. In addition, the index

and can be positively skewed due to *skewness* biases.³⁷ The authors find empirical evidence that suggests that matching the event security to a control security of similar size-and-book-to-market ratio yields test statistics that are well specified in virtually all sampling situation they considered. Therefore, the use of matching firms rather than broader market index helps in mitigating the biases in calculating BHARs particularly the first two: the new listing and rebalancing biases. The fact that the BHARs are positively skewed, might lead to incorrect inferences being drawn from using the standard *t-statistic*. However, Barber and Lyon (1997) also point out that individual securities are more likely to have extreme positive buy-and-hold returns than the broad market indices. Consequently, they suggest that the skewness bias can be minimised if matched firms are used individually as benchmarks instead of a reference portfolio.

The asset-pricing models based measures of expected returns discussed in Section 4.4.1 commonly assume normally distributed returns but normality is a better approximation for short horizons like a month than for longer horizons, where skewness becomes increasingly important (Fama, 1998). In addition,

includes some of the event firms and if they underperform, they introduce a bias similar to that of the newly listed firms.

³⁶ The compounded returns on a reference portfolio, as an equally weighted market index for example, are typically calculated assuming periodic rebalancing. Buy-and-hold abnormal returns based on such a portfolio will reflect the periodic (monthly) rebalancing of all securities constituting the index. On the other hand, the returns on the event securities are compounded without rebalancing. Firms that had high (low) returns in month $t-1$ experience low (high) return in month t . The monthly rebalancing process implicitly assumes that when the equally weighted market index is compounded, firms that subsequently perform well (i.e. poor performers in period $t-1$) are purchased and firms that subsequently perform poorly (i.e. good performers in period $t-1$) are sold off in order to maintain equal weighting of all securities in the index. Consequently, if the consecutive monthly returns for individual securities are correlated, the long-run return on the equally weighted market index becomes higher than expected. This minimises the difference between return on the issuing firm and the return on reference portfolio, hence the negative bias in the mean long-run buy-and-hold abnormal return. Canina, Michaely, Thaler and Womack, (1997) add that rebalancing effect is more pronounced in daily rather than in monthly return compounding. Rebalancing, however, does not affect abnormal returns when cumulative abnormal returns (CAR) is used since the monthly returns of sample firms and the index are both summed up rather than compounded.

³⁷ The long-run abnormal returns are severely positively skewed. It is common to observe a sample firm with an annual return in excess of 100% but uncommon to observe a return on the market index in excess of 100%. Consequently, abnormal returns against the market index are positively skewed.

some of them impose a data requirement in the prevent period which could lead to a drastic reduction of the sample size.

Therefore, to compute the BHARs, this study uses expected returns proxied for by the returns on control firms matched to the sample firm by size and market-to-book ratio. In addition, two more benchmarks are formulated based on size-matched and size-and-industry-matched securities. First, the three benchmarks will allow comparison with other studies that used similar matching criteria. The second reason is to control for the fact that the sample is dominated by small firms and it is distributed across a number of industry sectors, which may influence the future average returns. Third, the use of the three measures of expected returns will help in assessing the sensitivity of the study results to the use of different methods.

4.6.3 Significance test

The study focuses on average post-offering performance of issuing securities relative to control securities matched by the selected matching criteria, from the same market, as measured by the buy-and-hold returns. The difference between the event security and the control security is that the event firm issued equity but the control firm did not. The raw returns on both the issuer and non-issuer are compounded over the same holding period and the abnormal returns are computed as the difference between the end-of-holding period returns. Therefore, the buy-and-hold return represents the return to the investor who purchased the stock on day τ and kept it until day T . This necessitates the use of the difference of means test using matched pair approach (that is, zero ABHARs) rather than comparing the two means assuming independence. This approach reduces variance in the sampling distribution, increases the chances of rejecting the null hypothesis as it returns higher statistics and uses the difference between the two measures (Mason, Lind, and Marchal, 1999).

The significance of the abnormal returns will be tested using the standard parametric t-test. A non-parametric test, the *Wilcoxon Signed Rank Sum Test* will also be applied to the overall buy-and-hold abnormal returns. The overall fraction of underperformance will be tested by both parametric and non-

parametric test. These measures are aimed at assessing the possibility of the influence of outliers. Comparative tests will be conducted between the relevant groups depending on the hypothesis, using equation 4.26.

4.7 Summary and Conclusions

In this chapter, the main data source and methodologies used in assessing long-run abnormal returns following various corporate decision and events were described. The models of abnormal returns (CARs and BHARs, and the Fama-French's (1993) three-factor model), measures of expected returns, and the tests of the significance of the abnormal returns, were covered. The analysis in this thesis will use BHARs rather than CARs for its relative benefits as recommended in Ritter (1991), Conrad and Kaul (1993), Barber and Lyon (1997), and Brown and Warner (1997). The matching firm approach will be used in order to alleviate the concerns raised in the studies reviewed in this chapter. From the nature of the experiment where the return to investor who buys into the issuer is compared to the return if the investor buys into the nonissuers and hold for a corresponding period, a matched-pair approach for testing for the significance of the abnormal returns will be applied. On the partitioning analysis, a comparison of two population assuming unequal variances will be used according to the hypothesis being tested.

CHAPTER FIVE

LONG-RUN PERFORMANCE OF UK EQUITY RIGHTS ISSUES

5.1 Introduction

This chapter presents the results for the long-run stock performance of UK equity rights issuing firms listed on the London Stock Exchange in which ordinary shares are issued to holders of existing ordinary shares on *pro rata* basis. Equity offering announcements are bad signals of firm value. It is generally accepted that equity issue announcements are followed by negative stock market price reaction.³⁸ The basic assumption is that information asymmetry exists between managers of the firm and investors on the market about the firm's value, and managers would only issue equity at times when they believe their firm's shares are overvalued. This is referred to as overvaluation exploitation, in which the main incentive of the managers is to create value for the existing shareholders by raising capital cheaply from new shareholders. When the issue is announced, investors adjust the price they are willing to pay for the shares downwards.

Recent studies report poor long-run stock performance for firms that take numerous corporate decisions (equity issues included). For equity issues most studies are concentrated on US firms where firm commitment underwritten offers are most common. See, for example, Loughran and Ritter (1995), Spiess and Affleck-Graves (1995) and Jegadeesh (2000). Kang *et al.* (1999) and Cai and Loughran (1998) are examples of studies reporting similar evidence for the

³⁸ See theoretical papers by Myers and Majluf (1984), Miller and Rock (1985), Lucas and McDonald (1990), to mention but a few. Smith (1986) and Eckbo and Masulis (1995) provide a comprehensive survey of empirical evidence on stock price reaction to security issues and SEOs announcements, respectively. Recent works that report significantly negative two-day announcement day returns for the UK rights issues include Burton *et al.* (1999; 2000), Armitage (2000), Slovin *et al.* (2000), and Suzuki (2000), with some extending to placings as well as open offers. Other papers report positive two-day announcement period abnormal returns e.g. Bigell (1997) and Tsangarakis (1996) on rights issues. Cooney and Kalay (1993) provide a theoretical analysis in which stock price reaction following equity issue announcement could be positive. In Japan, Kato and Schallheim (1992) and Kang and Stulz (1996) report positive two-day announcement day returns.

Japanese market. The overvaluation exploitation has been cited as the main reason why issuers underperform in the long run. For example, Loughran and Ritter (1995) conclude that their underperformance results are consistent with a market where firm managers exploit windows of opportunity in order to raise equity capital at a relatively low cost by issuing equity when shares are overvalued. Several other conclusions have been drawn from these studies. These include; under-reaction of stock market to equity issue announcements (Kang *et al.*, 1999); aggressive earnings management around equity offerings (Rangan, 1998; Teoh, Welch, and Wong, 1998); and insider trading activities around the announcements (Gombola, Lee and Liu, 1997; Lee, 1997).

Fewer studies have looked at rights issues and even much fewer have looked at other modes of offering such as placing and open offers, which are common in the UK. Like public issues, rights issues are made following period of good stock performance and to the existing shareholders on *pro rata* basis. Yet their announcements also lead to a fall in share price, although the magnitude of the fall is not as big as that of the announcements of firm commitment offers. The overvaluation exploitation therefore cannot explain the fall in price following rights issues announcements. While most studies on firm commitment offers have capitalised on the overvaluation exploitation as the main cause of underperformance, this cannot confidently be used to explain the same for the rights offerings.

The main objective of this chapter is to examine the post-issue stock price performance following UK rights issues. Fama and French (1998) support the call by earlier studies in the US on the generality of the results by suggesting investigations to ascertain whether the patterns of security returns documented in the US hold in other countries. Finding evidence of similar patterns in other markets suggests that the patterns are not an outcome of data mining; neither are they country specific.

The London stock exchange is the third largest equity market in the world. While in the US most of the required equity capital is raised through firm commitment underwritten offerings, most UK firms depend on rights issues. However, following the 1986 deregulation, the market has witnessed growth in the use of other offering method such and placing and open offers. In addition,

the UK market differs substantially from the US, for example, in terms of regulations and the extent to which institutional investors are involved in company equity ownership, monitoring and control of management decision-making process. As a result, the UK market provides a good opportunity to extend the empirical long-run returns literature to cover not only a different market, but also a form of offering different from the firm commitment offering on which US and some of the Japanese studies are based. The differences in the institutional characteristics of the UK equity market compared to other markets make the resulting evidence an important contribution to our understanding of the long-run abnormal returns following equity issues.

To achieve this objective, a sample of equity rights issues in which ordinary shares are offered to existing holders of ordinary shares is drawn from Datastream and other supplementary sources. The buy-and-hold returns model is used to compute abnormal performance where the expected (normal) returns are based on the control firm technique, with the matching firms picked by size, size and industry, and size and market-to-book ratios, with a rather more conservative matching approach.

In this chapter, I document strong evidence that equity rights issues in the UK significantly underperform in the post-offering period. Using a sample of 818 seasoned equity offerings conducted through equity rights issues by 589 firms during the 1986-1995 period, I find that issuers significantly underperform all the three benchmarks used (size, size and industry, and size and market-to-book ratio) over the one-, three-, and five-year periods following the offering. Initially, issuers outperform the non-issuers over the first month. The abnormal returns become negative in all benchmarks beginning at the fifth month. From the seventh month onwards, the negative abnormal returns are statistically significant irrespective of the benchmark used. The magnitude and the pattern of the abnormal returns are remarkably similar to those reported in the US (e.g., Loughran and Ritter, 1995; Spiess and Affleck-Graves, 1995).

This is, however, not the first study on UK rights issues but it differs from previous studies in a number of ways. Levis (1995) examines the long-run performance following rights issues in the context of IPO firms that reissued within the following five years, against the FT All Shares price, and the

extended Hoare Govett Smaller Companies (HGSC) indices. In addition, Levis uses control portfolios of all firms in the same size decile as the sample firm, constructed based on market values of equity at the end of the previous calendar year. This sample is limited to re-issuing IPOs and the analysis is mainly based on the market indices. The post-offering period is limited to 18 months only. Similar limitations are found in Marsh (1979). Michailides (2000) examines UK rights issues in the context of their timing, against size and industry, and industry and market-to-book ratio benchmarks to compare long-run performance between rights issues made during “hot” and “cold” market periods. It is the only study examining the five-year post-offering period. A contemporaneous study, Abhyankar and Ho (2001), examine UK rights issues using a portfolio approach but the analysis is limited to 36 months only. As a result, this study provides additional evidence based on UK equity rights issues against size, size and industry, and size and market-to-book ratio benchmarks, using a more conservative matching approach. In addition to assessing the sensitivity of the buy-and-hold abnormal return to the benchmarks used, the use of these particular three benchmarks will help to compare our results with those reported elsewhere, based on similar benchmarks.

The rest of the chapter is organised as follows: Section 5.2 summarises evidence from previous studies. Section 5.3 describes the sample whereas the methodology is described in Section 5.4. Section 5.5 presents the empirical results and Section 5.6 summarises and provides some conclusions to the chapter.

5.2 Previous Studies

Section 3.2 reviewed previous research on long-run abnormal return as summarised in Table 3.1. This section recollects the evidence and identifies the areas in which this chapter contributes. The studies used the traditional event studies (CARs), the buy-and-hold abnormal returns (BHARs), the calendar time approach (Fama-French model), or some combination of them.

In the US, for example, Spiess and Affleck-Graves (1995) report mean BHAR of -22.8% (wealth relative = 0.85) and -42.4% (wealth relative = 0.786) for the 3- and 5-year post-offering periods respectively, using size and industry

benchmark. The authors point out that a similar trend was observed against non-issuers chosen by book-to-market ratio and size. The study also finds similar trend in the abnormal returns using the CAR approach. Loughran and Ritter (1995) report mean BHAR of -33% (wealth relative = 0.78) and -59.4% (wealth relative = 0.69) for the 3-, and 5-year post-offering periods, respectively, against non-issuing firms of similar size. In Spiess and Affleck-Graves (1995), the BHAR model is implemented using the difference between compounded return on issuing firm and non-issuing firm. In Loughran and Ritter (1995), the BHAR model is implemented using the difference between compounded return of the portfolios of issuers and non-issuers. Moreover, Loughran and Ritter (1995) find significant underperformance using Fama and French (1993) model. More evidence of underperformance following US SEOs is reported in Brav *et al.* (2000) and Jegadeesh (2000).

In Japan, Cai and Loughran (1998) report BHARs of -6.4% and -5.7% for one year post-offering period against size, and size and market-to-book value matched firms, respectively, each with a wealth relative of 0.95. Over the three-year window, they report BHARs of -17.8% (wealth relative = 0.88) and -11.6% (wealth relative of 0.92) for the same benchmarks, respectively. Furthermore, over the five-year post-offering period they report BHARs of -38.8% (wealth relative 0.82) and -29.1% (wealth relative of 0.86) for the same benchmarks, respectively. The authors report similar trend in underperformance using equally weighted TSE, equally weighted industry portfolio firms, market-to-book matched, and book-assets-and-industry matched benchmarks. Kang *et al.* (1999) also find strong evidence of significant underperformance following Japanese public equity issuers, against size, and size and market-to-book ratio matched nonissuers.

The evidence above is based on public equity offerings, mainly firm commitment offers or equivalent and is biased toward the US and Japanese firms. Little has been done on rights issues let alone on UK market where in addition to its size and position in the world of financial markets, rights issues have been dominant for years. Early insights of long-run performance following rights issues can be traced to the early work by Merrett *et al.* (1967). The authors analysed 110 rights issuers in 1963 and report evidence indicating the

capital appreciation of the issuer's shares to be 3.2% higher than the average share appreciation represented by the Daily Mail Index of share prices over the year following rights issues. Marsh (1979) examines rights issues from 1962 to 1975 and report positive abnormal returns over the one year period following the offering irrespective of the benchmarks used. In the second year, however, the abnormal returns were sensitive to the benchmarks used where the industry equally weighted and size equally weighted portfolios yield negative abnormal returns.

Examples of more recent works on UK rights issues include Levis (1995), Michailides (2000), Suzuki (2000) and Abhyankar and Ho (2001). Levis (1995) examines 158 IPOs (out of a sample of 713 IPOs) reissuing at least once via a rights issue within the five-year after market period. The author measures abnormal returns using the CAR model and the reference portfolios as measure of expected returns, i.e. the FTA index, HGSC index and a size decile comprising all firms in the same size decile as the event firm based on prior year market capitalisation. The author finds evidence of significant underperformance against all benchmarks over the eighteen months following the offering. This study is however, limited to reissuing IPO firms, and used models of abnormal returns as well as measures of expected performance that have been subject of criticism. Michailides (2000) examines a much wider sample of rights issues from 1975-1996 in the context of their timing. The author finds that only "cold" market issuers significantly underperformed the industry and market-to-book ratio benchmark over the four and five year post-issue. "Hot" issuers did not significantly underperform the same benchmark. Neither the "hot" nor the "cold" issuers significantly underperformed the size and market-to-book ratio benchmark. The author finds no significant difference between the "hot" and "cold" period issuers and therefore concludes against timing for overvaluation exploitation.

Of the two more recent papers, Suzuki (2000) finds that rights issuers significantly underperformed a size-matched portfolio by -15% over the two years after the offering. Abhyankar and Ho, (2001) examine 670 UK rights issues over the period 1989-1997 and find that three years after the offering, issuers show significant underperformance using a number of benchmark

portfolios, namely: size and industry, book-to-market and industry, and size and book-to-market ratio. Moreover, the authors use calendar-time approach, Fama and French's (1993) Three-Factor model and Carhart's (1997) Four-Factor model, and in both they show that the significance of the underperformance wears out or disappears. In turn, they conclude that the underperformance is sensitive to methodology used consistent with the Fama's (1998) argument. See also Eckbo *et al.* (2000) and Mitchell and Stafford (2000) for public offerings in the US.

Internationally, evidence of significant long-run abnormal performance following rights issues is mixed. Over the first year after the offering, Cai (1998) reports mean BHAR of -18.1% (wealth relative = 0.87) and -8.6% (wealth relative = 0.94) using size alone and size and market-to-book value benchmarks, respectively. Over the 3-year window, the mean BHARs are -27.2% (wealth relative = 0.86) and -26.2% (wealth relative = 0.86) while over the 5-year window the mean BHARs are -33.4% (wealth relative = 0.87) and -22.8% (wealth relative = 0.91) using size alone and size and market-to-book value, respectively. In contrast to this evidence, Kang *et al.* (1999) find no evidence of underperformance following rights issues against size matched or size and market-to-book matched benchmarks, in the same market. Affleck-Graves and Page (1996) report significant mean BHAR of -41.6% against size-matched non-issuers over four years following South African rights issues made on the Johannesburg Stock Exchange (JSE). Duboius and Jeannerret (2000) report very weak evidence of underperformance following Swiss rights issues against size and market-to-book ratio control portfolios, which disappears when the Fama-French model and CAPM are employed.

Fama (1998) attributes this evidence on underperformance to model and test misspecification, and suggests that the use of multi-factor models, for example, would reduce or eliminate the abnormal returns. Loughran and Ritter (1999) also criticise the ability of certain methodologies to detect long-run abnormal price reactions by arguing that using benchmark and factor returns that themselves contain a large number of issuing firms reduces the power of performance tests. Other criticisms focus on the choice of the models of abnormal returns, measures of expected returns and test statistics, out of which

several recommendations are given. For example, the use of BHARs rather than CARs (Barber and Lyons, 1997; Kothari and Warner, 1997), the use of control firms rather than reference portfolios such as the market index and so on. The assessment of the significance of the abnormal returns too received criticism and different suggestion have been made such as the use of skewness adjusted tests as well as bootstrapping tests instead of the standard parametric t-test.

Several studies have addressed these issues but so far, there is no conclusive evidence. Here are some examples. Jegadeesh (2000) measures underperformance of US SEO firms against not only size matched, but also market-to-book-matched, earning-to-price matched, lagged six-month returns and lagged 36-month returns. In addition, the author employs factor models: the Fama-French's (1993) Three-factor model and the Carhart's (1997) four-factor model. Despite these varieties of models, the author reports consistent underperformance of SEOs. Brav *et al.* (2000) utilised the time-series factor models, which they argue to be useful in capturing the covariation of SEO returns but find that the use of the Fama-French model still show significant underperformance and the modification of its factors only improves its explanatory power. Furthermore, they show that purging benchmarks and factor returns of issuing firms does not substantially change the time-series regression results or the characteristics-matched performance, as claimed in Loughran and Ritter (1999).

Fama and French (1998) question the generality of the results in terms of consistency in other markets, emphasising on the importance of carrying out studies in other markets to ascertain whether the reported underperformance is specific to the U.S. market. As a result, such studies have been extended to cover more corporate financing and strategic decisions. The available evidence shows considerable variations in the size of underperformance in different countries and in different types of offerings. Consistency of evidence on the explanatory hypotheses also varies according to countries and type of offering. From the evidence so far, while one hypothesis is important in explaining the presence of long-run underperformance in one country or in one type of offering, it is not in others. Again, it is tempting to say no comprehensive set of factors has been identified as able to explain the whole underperformance of these

firms. Availability of different offering methods, different institutional features and frameworks from one country to another may be blamed for these varied conclusions.

However, the pace at which the literature and the body of empirical evidence in this area is growing, is biased towards the U.S. and Japanese markets hence leaving the UK market, under-utilised. For example, Levis's (1995) work is limited to the IPOs that subsequently issue rights within the five years of going public and to the 18-month post-issue period only. In addition, it relies heavily on the CAR method as well as the market indices to measure expected returns. Similarly, Marsh's (1979) work is limited to two years after the offering and relies heavily on CAR model as well as the market indices. Both the market indices and CAR model have been shown to bias the abnormal returns (Barber and Lyons, 1997, Kothari and Warner, 1997; Loughran and Ritter, 1999). Abhyankar and Ho's (2001) uses BHAR model and portfolio of matched firms to proxy for expected returns but it is limited to three years of post-issue period. Suzuki's (2000) work is also limited to two years post-issue period. Only Michailides (2000) reports insignificant underperformance in the five-year period post-issue against industry and size and industry and market-to-book matched firms. The literature on long-run abnormal performance also shows the linkage between long-run performance, and operating performance (e.g. Loughran and Ritter, 1997), earnings management (Rangan, 1998; Teoh *et al.*, 1998), insider selling (Karpoff and Lee, 1991; Gombola *et al.*, 1997; Kahle, 2000), and corporate governance. Other linkages are investors' overoptimism (Brous *et al.*, 2000; Jegadeesh, 2000), and valuation approach to assess overvaluation explanation, for example, in Jindra (2001). All these leave a lot to be desired for UK rights issues.

5.3 Sample Description

The sample consists of all 1399 rights issues during the period 1986-1995 as reported in the *Rights Issues Diary files* on the Datastream. To be included in the final sample:

1. The issue must involve an issue of ordinary share to the existing holders of ordinary shares according to their pre-offering holdings.³⁹ The London Stock Exchange Official Yearbooks were primarily used to single out ‘equity rights issues’, whether the announced issues did take place, whether or not they were simultaneously issued with other issues by way of other methods, and whether the issuers survived over the five-year post-offering period. The sampling process, therefore, excludes the following issues; (a) issues involving other securities, e.g. convertible preference shares, preference shares, loan stocks, warrants, graded ordinary shares, unit shares, income shares, alone or in combination with ordinary shares to holders of ordinary shares. (b) issues involving ordinary shares to holders of other securities alone or in combination with ordinary shares.
2. The issue must not have been made simultaneously with issues made through other methods of offering e.g. placing, subscription, open offers, offer for sale/cash, or a combination of placing and open offers.
3. The issue must be an issue for cash; the sampling, therefore, excludes introductions, bonus and capitalisation issues.
4. The issue must not be non-sterling and/or international issues.
5. The issuing firm must have been listed on the London Stock Exchange, either on the Official List (OL or Main) or the Unlisted Security Market (USM) before the issue.⁴⁰

³⁹ The data contained in the *Rights Issues Diary* files relates to rights issues, but not necessarily ordinary share to holders of ordinary shares. Some issues involve issuing ordinary shares to holders of other securities, issues of other securities to holders of ordinary shares, and some were issued simultaneously with offers through other methods. All these would make it difficult isolating performance between the performance related to equity offerings via rights issues and that related to other offering methods e.g. placings, open offers, etc as the case may be. Consequently, we term the sample as “UK equity rights issues”.

⁴⁰ The USM was set in 1980 mainly for smaller companies as a stepping-stone for small companies to be listed on the Main market, and the listing requirements were less stringent than were those for the Main market. In the early 1990, about 400 companies traded on the USM. It was later closed in 1996 and replaced by the Alternative Investment Market (AIM). No issue that was made on the Third market if any was included. The third market was closed in the end of 1990. Like Levis (1995) and Michailides (2000), we include issues made at both the Main and the Unlisted Security

6. The issue must have been announced and offered during the sample period.⁴¹
7. So far, the sample reduces to 900 issues. Furthermore, the issuing firm must have data available on the Datastream on its total daily returns as well as the market capitalisation and market-to-book value ratio (MTBV) at year-end prior to the offering year.⁴² For 73 issues, issuing companies did not have data on market values, market-to-book value ratios or both at the year-end prior to the offering year, out of which issuers of 36 issues had data on the items at the end of the issuing month. Issuers of 43 issues have negative market-to-book value ratios. Issuers of two issues did not have total return data on the Datastream. Excluding all these, but restoring those of which issuers have both data items at the end of the issuing month leaves the final sample at 818 issues, raising about £3.2 billions yearly.

Unlike in Abhyankar and Ho (2001), the sample does not exclude financials⁴³ or utilities⁴⁴. Instead, we perform a separate industry sector analysis. There is only one issue by a telecommunication utility, which is included in the service sector. Other studies in the US set minimum issue size to at least \$1 million while UK studies set it to at least £1 million, for a company to

Market (USM) of the London Stock Exchange. However, Abhyankar and Ho (2001) excluded them.

⁴¹ Because of the time lag between the announcement of rights issues and the actual offering, there is a spillover effect in the distribution of rights issues. As a result, 18 issues are announced in a particular year but offered in the following year within the sample period. In addition, five issues announced in December 1995 but took place in January 1996 are excluded. It follows that the 1986 sample excludes issues announced in December 1985 but took place in January 1986.

⁴² The market capitalisation is calculated by Datastream as the product of the number of the shares outstanding at a given date and the share price. The MTBV is calculated as the ratio of the market capitalisation of a company to its total equity capital plus reserves less total intangibles.

⁴³ Financials include banks, insurance companies, investment companies, investment trusts and properties. Other studies exclude them for the reason that they operate in a much tighter regulated environment of their own compared to industrial firms.

⁴⁴ Eckbo and Masulis (1995:1049) provide more discussion on reasons for excluding issues by utility companies. Previous studies, for example, Loughran and Ritter (1995), Spiess and Affleck-Graves (1995) and others, exclude them. (i) Utilities tend to employ the capital market more extensively than industrial firms do, leading to greater predictability of offerings (Smith, 1986). (ii) Utilities are subjected to rigorous regulatory environment regarding their plans to issue further equity, leading to lesser information asymmetry between managers and the market. These reasons reduce the ability of managers to time new issues for overvaluation exploitation purposes.

be included in the sample. This criterion is not adopted at sampling stage. Instead, the long-run BHARs are analysed at a later stage across different issue-size quintiles. The total number of issues in the final sample represents approximately 59 percent of the original sample. They were issued by 589 different companies, of which 410 companies made only one rights offering during the sample period, 137 made two, 35 made three, six companies made four offerings each, and one company - The Hartstone Group plc topped the list by making five issues over the sample period. 198 (105) issues were made within the five- (three)-year period after the issuers' IPO.

Each issuer's stock return performance is measured against the return on a control firm matched according to a specified criterion. Slightly over 2500 firms listed on the London Stock Exchange (Main and USM) over the sample period were assembled. To qualify for a control firm, the firm (live or dead) must have been listed and traded on the exchange for at least five years prior to the offering, and has not publicly issued new shares during that period.⁴⁵ This approach avoids the potential bias (selection/survivorship) in the estimation of abnormal performance towards larger and more successful companies. It also reflects, as close as possible, the pool of stocks an investor would have faced at the time of making the investment decision between investing in issuers or non-issuers. The investor would not have prior knowledge as to which companies would succeed and which ones would fail.

⁴⁵ During the sample period offering methods other than rights issues were used following the 1986 deregulation. Little or none is known about the post-offering behaviour of stock return of issuers through these other methods, except for the positive announcement effects for placings (Slovin, Sushka, and Lai, 2000) and the insignificant market reaction for non-rights issues compared to significant negative reaction for rights issues (Burton, Lonie, and Power, 1999). Also recently, Suzuki (2000) reports significant positive stock price reaction to UK placings issue announcements as well as to placings accompanied by open offers, but insignificant positive reaction to the announcements of open offers only. Consequently, the control firm must not have issued equity through any of these other methods. Similarly, a matching firm is disqualified during the post-offering period when it raises equity capital using such other methods.

5.4 Methodology

5.4.1 Abnormal return computation and significance tests

This study uses the buy-and-hold abnormal return (BHARs) rather than applying the traditional CAR model. In this model, the issuer's abnormal return is measured as the difference between the buy-and-hold return on the issuing firm and the expected buy-and-hold return (see, equation 4.6). The expected return is proxied by the return on a non-issuing firm chosen on size, size and industry, or size and market-to-book ratio. Although these matching procedures were generally described in chapter 4, a more specific description and the matching results are provided later in section 5.4.2.

In addition to BHARs I also compute the wealth relatives and the fraction of underperformance. The wealth relative is computed as per equation 4.9. This measure is important in interpreting the average performance of issuing firms relative to their non-issuing counterparts. The fraction of underperformance on the other hand, provides a measure of the percentage of issuers whose buy-and-hold returns are less than the buy-and-hold returns on their nonissuing counterparts. The fraction is a robustness check to detect whether the abnormal returns can be attributed to chance or a few outliers.

The significance of the abnormal return is tested using the standard parametric t-test as in equation 4.22, whereas the significance of the fraction of underperformance is assessed by equation 4.23 whether it is significantly different from 50%. I also apply non-parametric test on the abnormal returns (the Wilcoxon signed-rank sum test, equation 4.25) as well as on the fraction of underperformance (simple binomial sign test, equation 4.24). The purpose is to provide a robustness check for the possibility that the normality assumptions in the standard parametric tests may not quite be satisfied.

5.4.2 Benchmark construction

In this study, I use the return on a control firm to proxy for the issuer's expected return. In addition to picking the control firm by size-and-market-to-book ratios (Barber and Lyon, 1997), two more benchmarks are used; matching by size, and by size-and-industry. Apart from the fact that size and industry are

known factors influencing average stock returns, these three criteria will help comparing the results in this study with previous studies that used similar matching approaches. In addition, they will help assessing the sensitivity of the abnormal returns to benchmark specifications.

5.4.2.1 Size-matched benchmark

For each sample year, both the issuing firms and firms in the potential matching list are ranked by market capitalisation at the year-end prior to the offering year. For each rights issuing firm in the sample, a firm with the same market capitalisation, closest to but higher⁴⁶ than that of the issuing firm, at the calendar year-end prior to the offering⁴⁷ is chosen for a matching firm. The chosen firm must have been listed and traded on the exchange for at least five years prior to the offering, a period within which it must have not issued equity (through a rights issue or otherwise).

If the selected control firm delists⁴⁸ or subsequently issue equity (through a rights issue or otherwise) before the end of either the issuer's delisting date or five-year holding period, a second, a third or even a fourth matching firm, is spliced in on the issuer's delist or offering date. The new control firm's return series is spliced in on the first trading date of the month of offering, merger,

⁴⁶ According to Spiess and Affleck-Graves (1995), a control firm with market capitalisation higher than the issuing firm is preferred because it is expected that the size of the issuing firm will increase in the pre-offering and post-offering period due to the issuer's pre-offering stock performance and the value of the shares issued, respectively.

⁴⁷ The matching date follows previous practice, see for example, Levis (1995), Loughran and Ritter (1995), Spiess and Affleck-Graves (1995), and others. In other studies, for example, in Cai (1998), Cai and Loughran (1998), and Kang, Kim and Stulz (1999), the month of issue is used as matching date.

⁴⁸ It is common for some sample firms to delist their common stock post-event. Reasons include acquisition, bankruptcy or going private. Barber and Lyon (1997) considered two approaches to dealing with delisted firms: truncating and filling. When a sample firm data is missing return data post-event, return on the corresponding reference portfolio may be used as the realised return. When a controlling firm is missing data post-event, return of the corresponding reference portfolio may be used to fill in the missing returns. The difference between the two approaches lies on the use of the proceeds from an investment in the delisted firm. With filling, it is assumed that the proceeds are rolled over into the reference portfolio. Most studies, truncate when the sample firm exits and fill in when the control firm exits.

take-over or acquisition.⁴⁹ The replacement firm is the next immediate non-issuing firm with higher market capitalisation on the original ranking, assuming that investor would seek information once a year for cost reasons. A newly listed security becomes eligible for a matching security after any five-year period during which it should not have publicly issued equity.

Of all the 818 issues, 670 required only one matching firm while 143 and 5 issuers required two and three matching firms, respectively. The mean (median) pre-offering market capitalisation for the issuing firms is £160.78 (£31.91) million, while the mean (median) market capitalisation for the first matching firms is £163.87 (£32.35) million. The difference of the means is statistically insignificant, implying a reasonably close match.

5.4.2.2 Size-and-industry-matched benchmark

This process controls for both the firm size and industry effects in the performance measurement. All issuers and the potential matching list of firms segmented by industry, and then ranked by their pre-offering year-end market capitalisation. The FT-SE Actuaries Industry Classification System⁵⁰ is used for this purpose. See also appendix 5.1 for further details. For each issuing firm in the sample, a qualifying firm in the same industry, with market capitalisation closest to, but higher than that of the issuing firm is chosen for a control firm. If the issuing firm has the highest market capitalisation in the industry, the second largest qualifying firm in that industry is chosen. If the chosen control firm delists or offers equity during the holding period, the next closest firm by market capitalisation, in the original ranking and in the same industry is spliced in. If a suitable control firm is not available within the same industry, an alternative firm is taken from a sector close to that of the sample firm, i.e.

⁴⁹ This splicing approach is adopted because of the complexity involved in pulling together the announcement dates of every equity issue (including non-rights offerings), mergers, takeovers, and acquisitions, given time constraints of the study.

⁵⁰ As in November 1995, the system grouped listed firms into 8 economic groups, 38 industry sectors as well as several sub-sectors within each sector. The system provides a model of classification to reflect the industrial profile of the prevailing economy. In addition, companies grow and diversify, hence, the possibility that some firms cross from one sector to another over time. We adopt the year 1995 as our base year. For firms delisting for various reasons before that date, we obtain details of their main activities as well as previous classification from the London Stock Exchange Yearbooks and translate the company into the sector it would have been had it survived to and beyond 1995.

within the same economic group. Only 19 issues required a matching firm from a sector different from that of the issuing firm. Substitution and splicing is done in the same way as in size matching.

Of all the 818 issues, 581 issues required a single matching firm whereas 209, 27, and 1 issue required two, three, and four matching firms, respectively. The mean (median) pre-offering market capitalisation of the issuing firms is £160.78 million, while that of the first matching firms is £257.85 million with t-statistics for the difference statistically significant at 1%. This statistically significant size difference is mainly due to the difficulties in finding closer matchers for the bigger companies, within the same sector, that did not issue equity. It is also partly due to the size diversity among firms within one sector.

5.4.2.3 Size and market-to-book ratio matched benchmark

In addition to size, stock returns are positively related to book-to-market ratios in the US (Fama and French 1992; 1993). Similar evidence is found in UK firms (Strong and Xu 1997; Guidi and Davies, 1999). Since SEOs are preceded by large pre-issue increases in stock prices (See for example, Levis, 1995; Loughran and Ritter, 1995; Abhyankar and Ho, 2001) one would expect, on average, the issuing firms to have higher market-to-book ratios than non-issuing firms, hence the need to consider adjusting for both size and market-to-book ratios in the long-run returns. See also Barber and Lyon (1997) who find that matching by both size and market-to-book ratio yields a well-specified test statistics in virtually all sampling situations they considered.

For each issuing firm a sub-list from the list of potential matching firms with market capitalisation at the year-end prior to the offering year within $\pm 30\%$ ⁵¹ of the issuing firm's market capitalisation is drawn. These are then ranked by market-to-book ratios.^{52 53} For each issuer, a firm from this sub-list

⁵¹ The $\pm 30\%$ margin was empirically shown to generate well-specified t-statistics in Barber and Lyon (1997). The same margin is used in this study. Since the final match is picked such that the sum of the absolute percentage differences between sizes and market-to-book ratios of the issuing firms and the matching firms is minimised, the use of this criteria is not expected to bias the result.

⁵² The market-to-book ratio data is drawn from the Datastream where it is defined as the ratio of the firm's market capitalisation to net tangible asset (net book value). Book value of equity is defined as total assets, excluding intangible assets less total liabilities,

with a market-to-book ratio closest but higher than that of the issuing firm is chosen for a matching firm.⁵⁴ To ensure that the two variables are closest the firm is chosen such that the sum of the absolute percentage differences between sizes and market-to-book ratios of the issuing firm and matching firms is a minimum. Substitution and splicing is done in a similar way as in size matching.

Of all the 818 issues, 622 issues required one match, while 190 and 3 issues required two and three matches, respectively. The mean (median) of the first non-issuing matched firms is £153.80 million compared to £160.78 (£31.91) million of the sample firms. The mean (median) market-to-book ratio is 3.68 (1.87) for the sample firms compared to 3.40 (1.94) for the matching firms. While the mean difference in sizes is significant at 5% level, the mean difference in market-to-book ratios is not. Since the vast majority of the issuing firms in the sample are small firms and given the inverse relationship between firm size and expected return (Banz, 1981), one would expect the difference in sizes between issuers and non-issuers in the last two benchmarks to bias against finding negative abnormal performance.

5.5 Empirical Results

5.5.1 Descriptive statistics

Table 5.1 and Table 5.2 present the distribution of the sample of UK rights issues across years of offering by years and industry sectors, respectively. Appendix 5.1 provides further details on the composition of the 17 sectors used. Column 2 of Table 5.1 shows the number of issues across the sample years while column 3 shows the number of issues as a percentage of the total sample.

minority interest and preferred stock; or as the difference between ordinary shareholder's equity and total intangible assets.

⁵³ Firms have different accounting year-ends, which will be reflected in the denominator of the market-to-book ratios. The matching uses the ratios at the accounting year-end, in which case, the differences in the accounting year-end were ignored. This is acknowledged here as a limitation although it is not expected to bias the results because the mismatch in accounting year-ends is likely to be random.

⁵⁴ Alternatively, we could start with book-to-market ratio first then choose on size basis. Barber and Lyon (1997) evaluate the two approaches and conclude that although both work well in most sampling situations, the former yields test statistics that are well specified in virtually all sampling situations they considered.

Similarly, column 2 of Table 5.2 shows the number of issues across the industry sectors while column 3 shows the number of issues as percentage of the total sample.

Fourteen percent of the issues took place in 1991, followed closely by years 1993 (13%), 1986 (12%) and 1987 (11%). On the other hand, 1990, 1992, and 1995 are years with relatively fewer offerings, 6.5%, 7.1%, and 7.3%, respectively. Figures 5.1 and 5.2 compare both the number of issues and the real proceeds between the sample and the original sample (population) over the period as drawn from the Datastream. In both figures, the trend in the final sample mirrors that of the original sample from the Datastream. The engineering sector has more issues over the sample period (16%) followed by the building sector (12%). The distribution in the rest of the sectors is fairly even.

The cluster of offerings appears to be related to the stock market behaviour during the sample period. The FTA Share Price Index rose to 1987, declined towards 1988 and recovered to another high in 1991. It took another dive and recovered to another high in 1993. Suzuki (2000), for example, points out that in 1992, FTSE All Share index fell most sharply (about 15% in three months). In the Quality of Markets Review (1987), it was pointed out that the drop in the index towards 1988 was associated with some of the UK institutional investors being less willing and less able to take on further equity after the October 1987 crash. This was mainly because either, most UK institutional investors already had high proportions of equity in their portfolios or that their cash levels had been exhausted in the underwriting of big issues by the government through the privatisation programmes.

Another possible explanation was that prospective issuers, worried of the potential consequences of the situation then, would have chosen not to issue equity. It is also possible that the trend was related to the 1986 'big bang'. The London Stock Exchange rules on the pre-emption right were changed making other forms of equity offering applicable. For example, equity offering via placings was more likely to be used by firms raising relatively smaller amounts as the method was considered cheaper. For the 1991 rights issues boom, the KPMG's (1991) review argues that towards this year the stock market was recovering from the effects of the Gulf war, a condition which provided

companies with opportunities and incentives to raise equity capital relatively more cheaply.⁵⁵

Columns 4 and 5 of Table 5.1, present the distribution of issues between the Main and the Unlisted Security Market (USM) at the time of announcement. Issuers of 691 issues were listed on the London's Main market whereas issuers of 127 issues were listed on the USM at the time of issue announcement.⁵⁶ For the issues made on the USM, issuers of 64 issues transferred to either the Main market or AIM before they either delist or reach their five-year anniversary. Issuers of 59 issues either remained on the USM to the fifth anniversary or delist before that for various reasons, including the closure of the USM in December 1996.⁵⁷ Column 6 of Table 5.1 presents the distribution of rights issues made within the five-year period of the IPO. 198 issues (24% of the sample) were made within the five-year period after they had gone public, out of which 105 were made within 3-year period of IPO.

Table 5.3 presents summary statistics for the whole sample, whereas columns 7-10 of Table 5.1 and columns 4-7 of Table 5.2 show the summary statistics across the sample years and industry sectors, respectively. Overall, the mean (median) size of the issuing firms is £160.77 (£31.91) million. The largest issuer is worth £5,904.3 million prior to the offering, while the smallest issuer is worth only £0.32 million. The eighth column of Table 5.1 analyses the mean firm size yearly. Years 1991 and 1993 are the only years with above average issuing firm size. Year 1990 has the lowest average issuing firm, approximately a third of the average size issuer. From Table 5.2, four sectors have above average size issuer. The financials group has the largest average issuing firm (more than thrice the size of the average issuing firm) followed by

⁵⁵ Loughran and Ritter (1995) also point out that the period between October 1987-market crash and the February 1991 Gulf war victory was a period of low issue volume in the US, but the level of issue activities increased considerably after that.

⁵⁶ The Alternative Investment Market (AIM) does not feature much in the sample as it started in June 1995, the second half of the last sample year.

⁵⁷ The high rate of transfer is partly attributable to the 1990 reforms on the listing requirements on both the Main and USM. In addition, the plan to close the USM was revealed as early as 1993, leaving USM-listed companies with three options: transfer to the Main market if they qualify, wait for the launch of the AIM, or consider losing their quoted status when the USM closes. This could explain the low number of issues made on this market for the years 1993-1995. The trend could also be explained by the two reforms on the stock exchange in 1986 and 1990.

the pharmaceuticals and retailers (more than twice), whereas textiles and distributors sectors have the smallest average issuers before the offering (slightly less than a quarter the size of the average issuer). Figure 5.3 shows that the firm size is positively skewed, as issuers of 83% of the issues have below average market capitalisation prior to the offering. Issuers of about 27.7% of the issues were worth £10 million or less before the offering, whereas issuers of 3.9% of the issues were worth more than £ 1 billion prior to the offering. The leading companies in this category include, in a descending order, Astrazeneca Plc, Sainsbury (J) Plc, Bass Plc, Tesco Plc, Barclays Plc, Cadbury Schweppes Plc, and CGNU Plc. These companies cover the market value range from £2500 to £5900 million with one frequency each. These large companies may explain the large average issuer in their respective industry sectors.

The mean (median) issue size is £39.54 (£11.92) million (see Table 5.3). The largest issue is £1300 million, while the smallest issue is £0.14 million. The ninth column in Table 5.1 shows analysis of mean issue size yearly. Years 1987, 1991, and 1993 show mean issuing size above average, in fact, above £50 million, while 1990 has the lowest (half the average) issue size. From Table 5.2, the financials has the largest average issue size (about 3 ¼ times the average issue size). Retailers and pharmaceuticals issued approximately twice the average issue size whereas the mining sector issued slightly 1 ½ times the average issue size. Distributors and textiles sectors have the lowest mean issue sizes (less than a third of the average issue size). From Figure 5.3, the distribution of issue size is positively skewed as about 80% of the issues are below the average issue size, 39% of the issues are £1 million or less, and the highest percent of issues (25.3%) are equal or less than £5 million but higher than £1 million. Issues worth more than £300 millions represent only 2.8 percent of the sample. The leading firms in issue size include Astrazeneca Plc (£1300 million), Barclays Plc (£921 million), Manpower Plc (£837 million), Midland bank Plc (£700 million), Maxwell PLC (£630 million), Tesco Plc (£572 million), and Bass Plc (£556 million). These also reflect in the average size in their respective industry sector; see for example, financials (Barclays and Midlands Banks), and retailers (Tesco Plc).

In relative terms, firms issue shares of value equivalent to an average of 59% (median of 32%) of their market value. Like the other two measures, these figures are highly affected by outliers. The highest percentage issued is 962% while the lowest is only 0.6%. Over 10% of the issues were at least 100% of the issuing company's market capitalisation prior to the offering, while slightly less than 3% of the issues were less than 10% of issuing company's market capitalisation. From the last column of table 5.1, years 1987-1989 each record average relative issue size above the average relative issue size. On average, issuers in the mining sector raise over 100% of their pre-offering market capitalisation. In addition, property, leisure & hotels, media, textiles and distributors raised capital above average relative to the issuers' market capitalisation prior to the offering.

Also in Table 5.3, issuers have, on average, 3.68 market-to-book value ratios (median is 1.87), with a maximum of 133.9 and a minimum ratio of 0.12. In addition, issuers of 81% of the issues have market-to-book ratio higher than unity. Pharmaceuticals, support services, and media sectors have relatively higher market-to-book ratios, whereas, property and building sectors have lower market-to-book ratios (see, Appendix 5.2 for industry details). Except for the pharmaceuticals, higher market-to-book ratios in the support and media sectors were expected.

In summary, there is evidence of clustering of the issues in some of the year, which largely reflects the market situation over the sample period. With the exception of the buildings and engineering sectors, the distribution of the issues across the rest of the industry sectors is fairly even. Most of the high volume years are characterised by big issues and large issuers. Majority of issuers are small firms; e.g. 83% are below average size issuer. In addition, majority issuers make small issues; e.g. 80% of the issues are below average issue size where 39% of the total issues are less than £1 million. In relative terms, only 10% of the issues were above the market value of the firm. Finally, 81% of issuers had market value higher than book value of their assets.

5.5.2 Post-offering stock performance

Table 5.4 reports the mean (median) buy-and-hold abnormal returns for the 1-, 3-, and 5-year buy-and-hold strategies against control firms matched by size, size and industry, and size and book-to-market ratio. The event day, $t = 0$, is defined as the last trading date of the issuing month. This definition also minimises the impact of the announcement-period return volatility, as there is a considerable time between the announcement day and the actual issuing of shares. Defining a trading month as 21 successive trading days relative to the event day, the one-, three-, and five-year post-offering periods have 252, 756, and 1260 days, respectively (see also Loughran and Ritter (1995), Spiess and Affleck-Graves (1995), and others). Therefore, the reported buy-and-hold returns represent one of the investors' experiences. That is an investment strategy in which the investor purchases the issuers' shares at the closing price on the last trading day of the issuing month and hold them up to the end of the period, defined as the earlier of either the delist date or the first-, third-, or fifth-year anniversary.⁵⁸

In addition to reporting the buy-and-hold abnormal returns, Table 5.4 also reports the wealth relatives and the fractions of underperformance. The wealth relative is defined as the ratio of the end-of-period wealth from holding a portfolio of issuers to the end-of-period wealth from holding a portfolio of matching firms (Loughran and Ritter, 1995; Spiess and Affleck-Graves, 1995; Cai and Loughran, 1998). This is computed as per equation 4.9. The wealth relative helps in interpreting the long-run abnormal returns. For example, according to Ritter (1991), a wealth relative greater than unity suggests that the issuing firms outperformed the matching counterparts while a wealth relative less than unity suggests that the issuing firms underperformed the matching counterparts. The fraction of underperformance is the fraction of the total sample of issuing firms whose buy-and-hold returns are less than the corresponding matching firms' buy-and-hold returns (Spiess and Affleck-Graves,

⁵⁸ The other experience is a strategy that would involve periodic rebalancing of the portfolio.

1995; Cai, 1998; Cai and Loughran, 1998). This helps checking whether the observed underperformance is a result of a few outliers.⁵⁹

The simple daily raw returns are computed as $r_t = (RI_t / RI_{t-1}) - 1$, where RI_t and RI_{t-1} are respectively, the total return index on day t and total return index on the previous day. Returns are then compounded over the holding period for both the issuing firm and the control firm (see equations 4.4 and 4.5). Abnormal return is computed as the difference between the buy-and-hold return for the issuer and buy-and-hold return for the control firm (see equation 4.6). The choice of up to five-year measurement window follows the evidence so far reported elsewhere for equity offerings as well as other corporate events (Loughran and Ritter, 1995, Spiess and Affleck-Graves, 1995, Jegadeesh, 2000). With the exception of Michailides (2000), all previous studies on long-run performance of UK rights issues examine post-offering periods shorter than five years.

Table 5.4 shows a strong evidence of negative mean (median) buy-and-hold abnormal returns for the rights issuing firms over the one to five-year holding periods after the issue, implying that the mean (median) buy-and-hold returns for the issuing firms are significantly lower than those earned by their corresponding non-issuing firms, in all benchmarks used. Over the one-year post-offering period, the mean (median) buy-and-hold returns are 7.52 (2.34)% for the offering firms versus mean (median) buy-and-hold returns of 16.22 (9.02)% for the size-matched non-issuers, 14.66 (9.48)% for the size and industry matched non-issuers, and 18.16 (11.22)% for the size and market-to-book ratio matched non-issuers. These represent, mean (median) buy-and-hold abnormal returns of -8.70%(-7.04%), -7.13% (-6.80%), and -10.64% (-11.11%) for size, size and industry, and size and market-to-book ratio matched non-issuers, respectively.

Over the 3-year post-offering period, the mean buy-and-hold returns are 19.75% (0.87%) for the rights issuing firms versus mean (median) buy-and-hold returns of 44.76% (27.45%) for size-matched non-issuers, 47.34% (24.79%) for

⁵⁹ If underperformance of issuers is the results of a few outliers, then the fraction of underperformance will be indistinguishable from 50%.

size-and-industry matched non-issuers, and 46.84% (26.09%) for size and market-to-book ratio matched non-issuers. These represent mean (median) buy-and-hold abnormal returns of -25.01% (-25.73%), -27.59% (-27.47%) and -27.09% (-25.61%) for the size-matched, size and industry-matched and size-and-market-to-book ratio matched non-issuers, respectively.

Similarly, over the five-year window, the mean (median) buy-and-hold returns are 37.87% (1.38%) for rights issuing firms versus 69.97% (34.65%) for size matched non-issuers, 78.14% (32.3%) for size and industry-matched non-issuers and 79.67% (38.02%) for size and market-to-book ratio matched-non-issuers. These represent mean (median) buy-and-hold abnormal returns of -32.10% (-34.65%), -40.27% (-34.30%) and -41.80% (-41.67%) for the size, size and industry, and size and market-to-book ratio matched non-issuers, respectively. In all cases the abnormal return are statistically significant (at 0.01 levels) using both the standard parametric t-statistics and non-parametric test (Wilcoxon signed-rank sum test).⁶⁰

All the wealth relatives are less than unity, varying from 0.93 one-year size-matched, to 0.77 for size and book-to-market ratio matched non-issuers. Also all fractions of underperformance are significantly different from 50% at 0.01 levels, based on z-test for population proportions as well as the non-parametric binomial sign test. All the three measures, the mean buy-and-hold abnormal returns, wealth relatives, and the fraction of underperformance, figures show increase in underperformance the longer the horizon.

The results compare well with those reported elsewhere; Loughran and Ritter (1995), Spiess and Affleck-Graves (1995), Jegadeesh (2000) for the US; Cai and Loughran (1998), Kang *et al.* (1999), for Japan. The results also compare with those reported for rights issues in Japan (Cai, 1998) and in South Africa (Affleck-Graves and Page, 1996). The results, however, are comparatively higher than the previous results reported in the UK studies using similar benchmarks. For example, Abhyankar and Ho (2001) report significant negative

⁶⁰ Initially, results were based on paired t-test, which assumes normally distributed differences between two populations. We run a normality test and there is sufficient evidence that the normality assumption is not quite satisfied in our sample of paired differences (BHARs), making the paired t-test results only approximate. The nonparametric tests results on BHARs demonstrate that the mean underperformance observed for issuing firms is not the result of the outliers in the data.

mean buy-and-hold abnormal returns of -19.50% and -8.53% using equally- and value-weighted portfolio of size and industry matched firms, respectively, over the three-year holding period. Michailides (2000) do not find significant buy-and-hold abnormal returns in the “hot” and “cold” issue groups, using size and industry matched firms.

Loughran and Ritter (1995) provide an insight to determine the equivalent investment required to achieve the same terminal wealth from the two strategies. From the size-matched results, for example, a pound invested on non-issuers would grow to £1.70 after five years compared to £1.38, when invested on the issuers over the same period. To achieve the same terminal wealth the investor in the issuers requires £1.23, about 23% higher than the amount put in non-issuers. This is almost half of the percentage reported on the US in Loughran and Ritter (1995). Alternatively, judging from the wealth relatives, a strategy of investing in a group of firms making rights issues on the last day of the issuing month and hold the shares for five years, would have left the investor with only 81 pence relative to each pound from investing in a group of size-matched non-issuers.

5.5.3 The trends in post-offering performance

Figure 5.4 plots both the sample and adjusted buy-and-hold returns over the five-year post-offering period. The sample returns for each T post-offering period are based on a strategy of buying and holding the stock from the offering date to T months, where T represents 1, 2, ..., 60 months after the offering. The buy-and-hold returns for the issuing firms show an upward trend over the 60 months period. The size-, size and industry-, and size and market-to-book ratio-adjusted buy-and-hold returns are calculated as the difference between month T mean buy-and-hold return for the issuers and month T mean buy-and-hold return for the non-issuers. The results show that the buy-and-hold abnormal returns are generally positive over the first few holding months before they subsequently show strong negative trend in the post-offering period. Investors who pursue a buy-and-hold strategy on issuers would earn some positive returns during the first few months and consistently lose money thereafter compared to pursuing the same strategy on the non-issuers.

Following the observed trend above, a further analysis is performed on the buy-and-hold abnormal returns over the first twelve months after the offering. Results are presented in Table 5.5. There is no evidence of significant underperformance over the first four holding months following the offering. In fact, the first month buy-and-hold abnormal returns are positive and statistically significant (except for the size and market-to-book ratio benchmark). Generally, the buy-and-hold abnormal returns start to deteriorate from holding month four onwards and starting from month seven they are consistently negative and statistically significant regardless of the benchmark used. These results are consistent with those reported in the US for firm commitment offers. For example, Loughran and Ritter (1995) find no evidence of significant underperformance during the first six months after the offering. The underperformance becomes severe during the next eighteen months. Spiess and Affleck-Graves (1995) also find significant positive CARs against non-issuers over the first month after the issue regardless of the benchmark used, and then the CARs become significantly negative trend over the months thereafter.

5.6 Summary and Conclusions

In this chapter, I examined the long-run abnormal returns following the 818 UK equity rights issues made by 589 different companies listed on the LSE between 1986 and 1995. The vast majority of the available evidence on long-run abnormal returns following seasoned equity offering (SEOs) is based on the US and Japanese firms, where public offerings in the form of firm commitment offers are dominant. Relatively little evidence exists for rights issues. This chapter contributes to the literature by providing new evidence not only on UK market but also on equity rights issues – strictly where ordinary shares were issued to existing shareholders of ordinary shares.

The evidence presented here is based on the buy-and-hold abnormal returns (BHARs) model where a range of metrics to measure expected long-run buy-and-hold returns are employed; namely, size-, size and industry- and size and market-to-book ratio- matched non-issuers. The choice of these benchmarks served two purposes: (i) to test for the sensitivity of abnormal returns to expected

return metrics, and (ii) to facilitate comparison of our results with other results elsewhere that used similar benchmarks.

Although this is not the first study for the UK firms, none of the previous studies, except Michailides (2000), provides five-year evidence. I also use a more conservative approach in the matching, where the non-issuers did not issue equity through rights issues or otherwise.

I find very strong evidence that UK equity rights issuers significantly underperform all the benchmarks used and over the horizons used. Although the results are remarkably similar to those reported elsewhere, the underperformance is relatively smaller than in for example Loughran and Ritter (1995). For example, a strategy of investing in equity rights issuing firms at the close of the trading day of the offering month and hold the for one (three, five) year(s) would have left the investors with only 93 (83, 81) pence, relative to each pound invested in size-matched firms that did not make equity issues. The magnitude of underperformance implies that 23% more money would need to be invested in the size-matched issuers than in the nonissuers to achieve the same terminal wealth five years later. As to the sensitivity of the buy-and-hold abnormal returns, there is not conclusive results indicating which benchmark consistently has low or high abnormal return. Over the early months of post-offering period, the size and industry matched benchmark results into higher abnormal returns whereas over the further months, the size matched benchmark results higher abnormal returns. The trend in the initial buy-and-hold patterns is similar to that reported in Loughran and Ritter (1995), Spiess, and Affleck-Graves (1995). The buy-and-hold abnormal return is positive and significant in the first month, before it becomes negative from month five and statistically significant after month seven regardless of the benchmark used.

Because the shares in rights issues are offered to existing shareholders, the overvaluation exploitation argument may not provide an appropriate explanation for these results. Thus, the results presented in this chapter may be consistent with case where the existing shareholders are too optimistic about the issuers' investment opportunities, as the managers are, and pay relatively higher prices for the shares. As the investment opportunities turn out to be less favourable than expected, the then optimistic investors become more

disappointed and revise the price downwards. This hypothesis is discussed in Kang *et al.* (1999) and evidence based on post-offering earnings announcements is presented in Jegadeesh (2000). See Section 3.3.3 for details. Investors' optimism may be caused by the higher market-to-book ratios of the issuing firms prior to the offering. It may also be due to the issuing firms' reputation as a frequent issuer, where a frequent issuer is interpreted as having growing profitable investment opportunities and thus issue equity to finance them. These issues will be considered in the next chapter.

The results may also be consistent with a case where the issuing firms fail to generate sufficient cash flows and the post-offering share underperformance reflects the shareholders revision of expected income from their holdings. This explanation however, is not considered in this study, but highlighted in Chapter 9 as an area of future research. It would be interesting to examine the operating performance of the issuing firms around the offerings and its relation to the post-offering stock performance.

Further, Fama (1998) and others, argues that the low returns of the issuing firms may not be related to the act of issuing seasoned equity offerings per se, but to cross-sectional relations between characteristics of SEOs firms and future returns. Thus, the SEOs may appear to perform poorly either because they are not evaluated against the correct benchmark (Jegadeesh (2000), or because the abnormal returns are averaged across firms with different characteristics that may affect the firms contribution to average returns. For the former case, Jegadeesh (2000) suggests the refinement of matching criteria to include more of the known factors affecting future average returns into the benchmarks. For the latter, Wolfgang and Thies (2002) suggest an analysis of the average abnormal returns in different groups based on firm characteristics.

In an effort to find an explanation of the observed pattern in the buy-and-hold abnormal returns, the next chapter identifies a number of issue and firm characteristics and uses them to partition the average buy-and-hold abnormal returns into quintiles, or otherwise as appropriate. The following two chapters explore ownership structure in the issuing firms around right offers. The examination of ownership structure is motivated by the literature linking both managerial and institutional share ownership and firm performance, for

example, Jensen and Meckling (1976), Morck *et al.* (1988), Short and Keasey (1999), Ang *et al.* (2000), to mention but a few.

There are other explanations for SEO underperformance, which are plausible for the rights issues cases. Such explanations include earnings management, insider trading, and the underreaction hypotheses. These are discussed in chapter 3 of this thesis. They represent areas of potential future development in a UK equity rights issues environment as highlighted in chapter nine.

Table 5.1 Distribution of UK Seasoned Equity Offerings (SEOs) by Year of Offering

The sample consists of 818 seasoned equity offerings of ordinary shares made via rights issue by 589 different companies listed on the London Stock Exchange (LSE) during the period 1986-1995. The primary source of data is the *Rights Issues Diary* files available on the *DataStream*, supplemented by the *Stock Exchange Yearbooks*, *KPMG Peat Marwick McLintock new Issue Statistics*, *Quality of Market Review*, and *Extel Financial Publications*.

Year ^a	No of Offerings	%age of Sample	Listing ^b		5 Years Since IPO	Aggregate Proceeds ^c (£bn.)	Mean Firm Size	Mean Issue Size	Mean Proc./ Firm Size ^d (%)
			Main	USM					
1986	95	11.61	87	8	16	3.83	118.09	26.49	53.80
1987	92	11.25	78	14	23	6.96	107.05	51.68	82.30
1988	88	10.76	68	20	29	4.49	123.69	36.51	62.30
1989	69	8.44	46	23	25	2.10	54.73	23.57	95.09
1990	53	6.48	38	15	18	1.22	105.61	19.41	48.40
1991	114	13.94	100	14	24	6.91	267.97	54.26	52.80
1992	58	7.09	45	13	20	1.73	134.23	27.72	50.00
1993	104	12.71	97	7	11	7.35	305.59	66.70	58.80
1994	85	10.39	76	9	17	2.49	124.86	28.38	42.80
1995	60	7.33	56	4	15	2.07	157.64	34.42	38.30
All	818	100.00	691	127	198	39.14	160.77	39.54	58.99

^a The original source gives the distribution based on the announcement dates. Following the design to measure stock performance from the end of the issuing month, this distribution has been adjusted for the spill-over effect.

^b Classification at the time of offering announcement. Only issuers of 59 out of the 127 rights issues made on the USM either survived to the end of the five-year post-offering period or delisted while on the USM.

^c Annual nominal amounts raised in billion Sterling pounds deflated by the UK annual Retail Price Index (RPI). Data on the index is obtained from the Datastream. The annual index's base is transilated to 1995 as $RPI_t^* = (RPI_t/RPI_{1995}) \times 100$, then the nominal amount raised in year t is deflated to obtain constant 1995 pounds as $Aggregate\ proceeds_t = (Proceeds_t/RPI_t^*) \times 100$.

^d Market capitalisation at the year-end prior to the offering year. In only 36 cases the market capitalisation figures at the year-end were missing in which case the month-end figures prior to the issuing month were used.

Table 5.2 Distribution of UK Seasoned Equity Offerings (SEOs) by Industry Sectors

The table presents distribution of the seasoned equity offerings made via rights issue by 589 different companies listed on the London Stock Exchange (LSE) during the period 1986-1995 by industry sectors. The primary source of data is the *Rights Issues Diary* files available on the *DataStream*, supplemented by the *Stock Exchange Yearbooks*, *KPMG Peat Marwick McLintock new Issue Statistics*, *Quality of Market Review*, and *Extel Financial Publications*.

Industry Sector	No of Offerings	%age of Sample	Aggregate Proceeds (£bn, 1995)	Mean Firm Size	Mean Issue Size	Mean Proc./ Firm Size (%)
1. Mining	29	3.55	2.24	205.11	63.48	104.20
2. Building	97	11.86	4.43	153.49	39.92	48.90
3. Other industrials	48	5.87	2.08	176.68	37.84	49.10
4. Electronic & Electrical	36	4.40	0.67	83.15	16.14	42.04
5. Engineering	129	15.77	4.16	104.25	26.61	56.30
6. Paper & printing	32	3.91	1.31	99.06	31.67	57.90
7. Textiles	45	5.50	0.62	37.96	11.57	65.70
8. Foods & Breweries	46	5.62	2.73	267.71	50.06	51.70
9. Pharmaceuticals	30	3.67	2.56	408.16	77.32	45.70
10. Distributors	56	6.85	0.74	39.97	11.05	67.39
11. Leisure & Hotels	44	5.38	2.30	142.73	41.30	72.80
12. Media	30	3.67	2.21	110.41	53.26	63.90
13. Retailers	41	5.01	3.75	406.99	78.97	48.60
14. Support services	48	5.87	2.02	67.92	31.38	58.00
15. Other services	31	3.79	1.17	132.42	33.20	70.00
16. Financials	28	3.42	4.69	600.82	127.48	32.80
17. Property	48	5.87	1.46	75.24	26.44	84.30

For details on composition of the 17 industry sectors, see appendix 5.1.

Table 5.3 Descriptive Statistics of the Seasoned Equity Offerings by Rights Issues

	Mean	Median	Standard Deviation	Minimum	Maximum
Proceeds (Nominal £millions)	39.54	11.92	98.56	0.14	1300.00
Proceeds (£million, 1995)	47.85	14.35	122.10	0.14	1377.63
Market capitalisation (£millions) ^a	160.77	31.91	468.24	0.32	5904.30
Market-to-book value ratio ^b	3.68	1.87	8.10	0.12	133.91
Proceeds/market capitalisation (%) ^c	58.99	31.68	99.46	0.56	962.19

^a Market capitalisation at the year-end prior to the offering except for only 36 cases where market capitalisation at the end of the issuing month is used

^b Market-to-book value ratios at the year-end prior to the offering except for the same 36 cases.

^c Nominal proceeds and market capitalisation at the year-end prior to the offering.

Table 5.4 Long-run stock performance following UK rights issues

This table summarises the mean [median] buy-and-hold stock returns, wealth relatives, and the fractions of underperformance for the post 1-, 3-, and 5-year buy-and-hold strategies for 818 rights issues of ordinary shares conducted by UK firms at the London Stock Exchange (LSE) during the period 1986-1995. Buy-and-hold stock returns are measured from the closure of the last trading day of the issuing month. The buy-and-hold abnormal returns calculations are based on the BHARs model in equation 4.6. The non-issuing firms are chosen based on size, size and industry, and size and market-to-book ratio matches. The wealth relatives are defined as the ratio of one plus mean buy-and-hold return on the issuing firms to one plus the mean buy-and-hold return on the matching firms (equation 4.9). For example, the 5-years wealth relative against size-matched non-issuers is calculated as $1.3787/1.6997=0.81$. The fraction of underperformance is the fraction of the total sample of issuing firms whose buy-and-hold returns are less than their matching firm's buy-and-hold returns.

	Buy-and-hold returns (%)			Wealth Relatives			Fraction of underperformance		
	1-Year	3-Year	5-Year	1-Year	3-Year	5-Year	1-Year	3-Year	5-Year
Rights Issuing firms (N = 818)	7.52 [2.34]	19.75 [0.87]	37.87 [1.38]						
Size-matched non-issuers	16.22 [9.02]	44.76 [27.45]	69.97 [34.65]						
Size-matched BHARs	-8.70 *** [-7.04] ***	-25.01 *** [-25.73] ***	-32.10 *** [-34.65] ***	0.93	0.83	0.81	56.36 ***	63.57 ***	63.57 ***
Size-and-industry-matched non-issuers	14.66 [9.48]	47.34 [24.79]	78.14 [32.3]						
Size-and-industry-matched BHARs	-7.13 *** [-6.8] ***	-27.59 *** [-27.47] ***	-40.27 *** [-34.3] ***	0.94	0.81	0.77	56.60 ***	63.94 ***	62.35 ***
Size-and-book-to-market-matched	18.16 [11.22]	46.84 [26.09]	79.67 [38.02]						
Size-and-book-to-market BHARs	-10.64 *** [-11.11] ***	-27.09 *** [-25.61] ***	-41.80 *** [-41.67] ***	0.91	0.82	0.77	59.41 ***	63.08 ***	63.57 ***

*** significant at 0.01 level

The significance of the mean BHARs and the median BHARs (figure in brackets) are tested using the matched pairs test (equation 4.22) and the Wilcoxon signed ranked sum test (equation 4.25), respectively. The significance of the proportion of underperformance is tested using both the z-test for population proportion (equation 4.23) and a simple binomial sign test (equation 4.24).

Table 5.5 Trends in the initial buy-and-hold returns

This table summarises the first twelve months buy-and-hold returns following the offering. The buy-and-hold returns are measured from the end of the issuing month to either the end of 1, 2, ..., 60 or the delist date. The abnormal returns are computed using equation 4.6 whereas the significance of the abnormal returns is based on standard parametric t-test (equation 4.22). "*", "**", and "***" indicates significance at 0.1, 0.05 and 0.01 levels, respectively.

	1-Month	2-Month	3-Month	4-Month	5-month	6-Month	7-Month	8-month	9-Month	10-Month	11-Month	12-Month
Rights Issuers	2.05	2.62	3.55	3.29	3.48	3.86	4.70	5.68	6.92	6.74	7.23	7.52
Size matched non-issuers	0.96	2.15	3.40	4.47	5.82	7.72	9.28	11.14	13.07	14.61	15.20	16.22
Size-adjusted	1.08 **	0.47	0.16	-1.18	-2.35 **	-3.86 ***	-4.59 ***	-5.46 ***	-6.15 ***	-7.88 ***	-7.97 ***	-8.70 ***
Size and industry non-issuers	0.38	1.28	1.95	2.79	4.00	5.48	7.39	8.66	10.50	11.92	13.30	14.66
size and industry adjusted	1.67 ***	1.34 **	1.60 *	0.50	-0.52	-1.62	-2.69 *	-2.98 **	-3.58 **	-5.18 ***	-6.06 ***	-7.13 ***
Size and MTBV non-issuers	1.20	2.78	3.53	5.02	6.26	7.44	8.80	10.82	13.48	15.50	16.99	18.16
Size-MTBV adjusted	0.85	-0.16	0.03	-1.72	-2.79 **	-3.58 ***	-4.11 ***	-5.14 ***	-6.56 ***	-8.76 ***	-9.76 ***	-10.64 ***

Figure 5.1 Distribution of the volume of SEOs (annual number of issues) 1986-1995

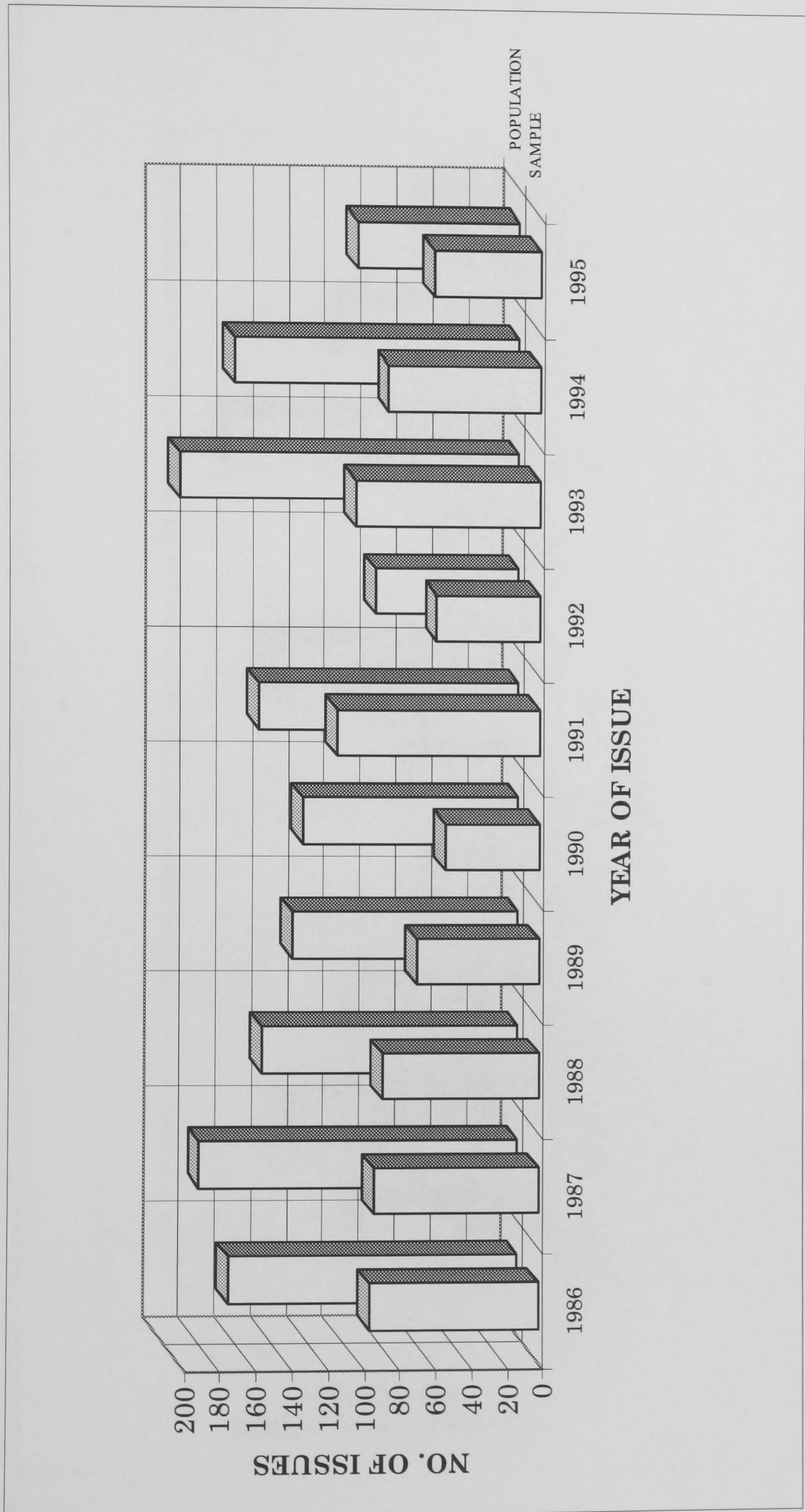


Figure 5.2 Distribution of the volume of SEOs (annual proceeds) 1986-1995

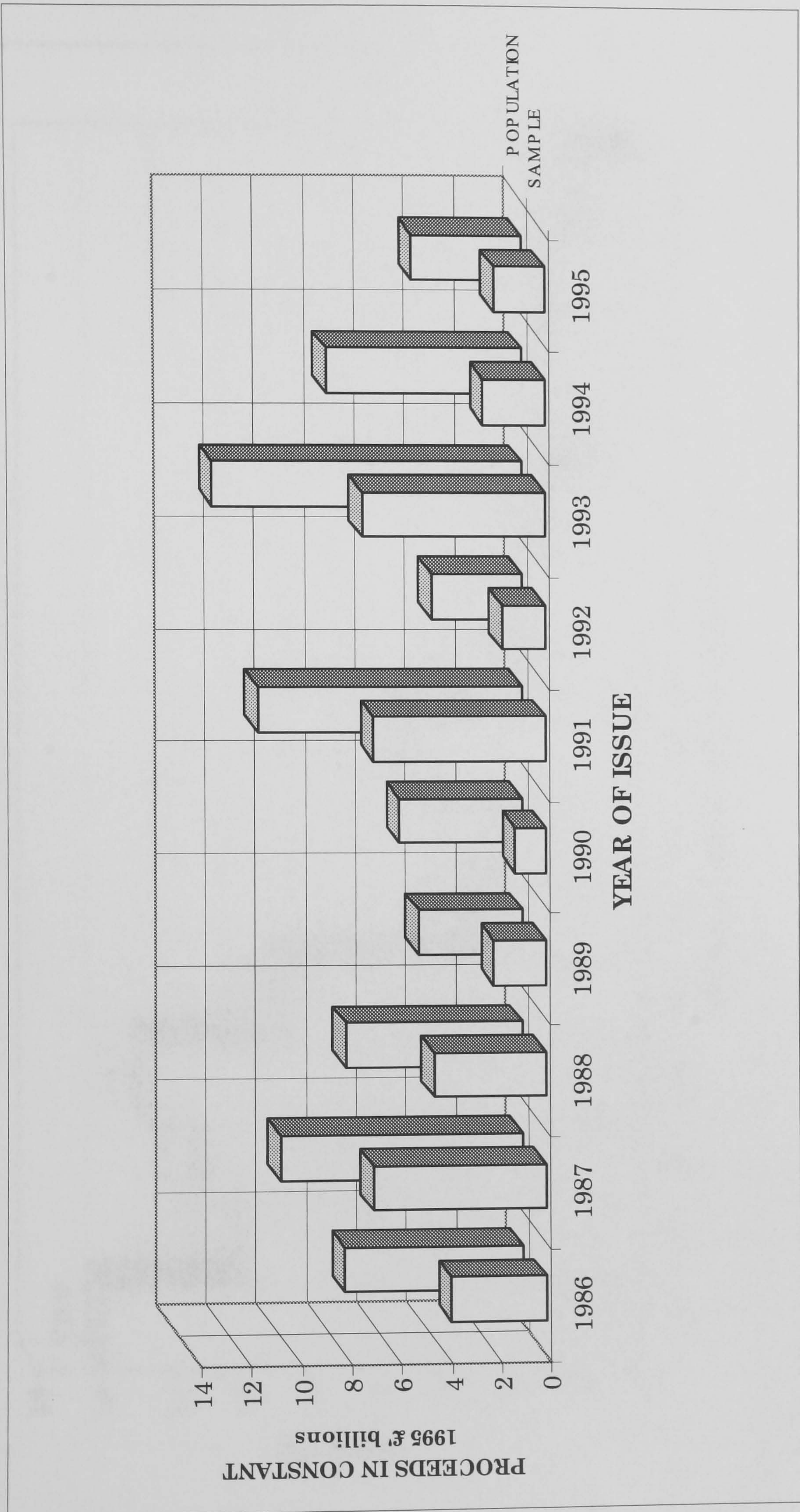


Figure 5.3 SEO firm size distributions 1986-1995

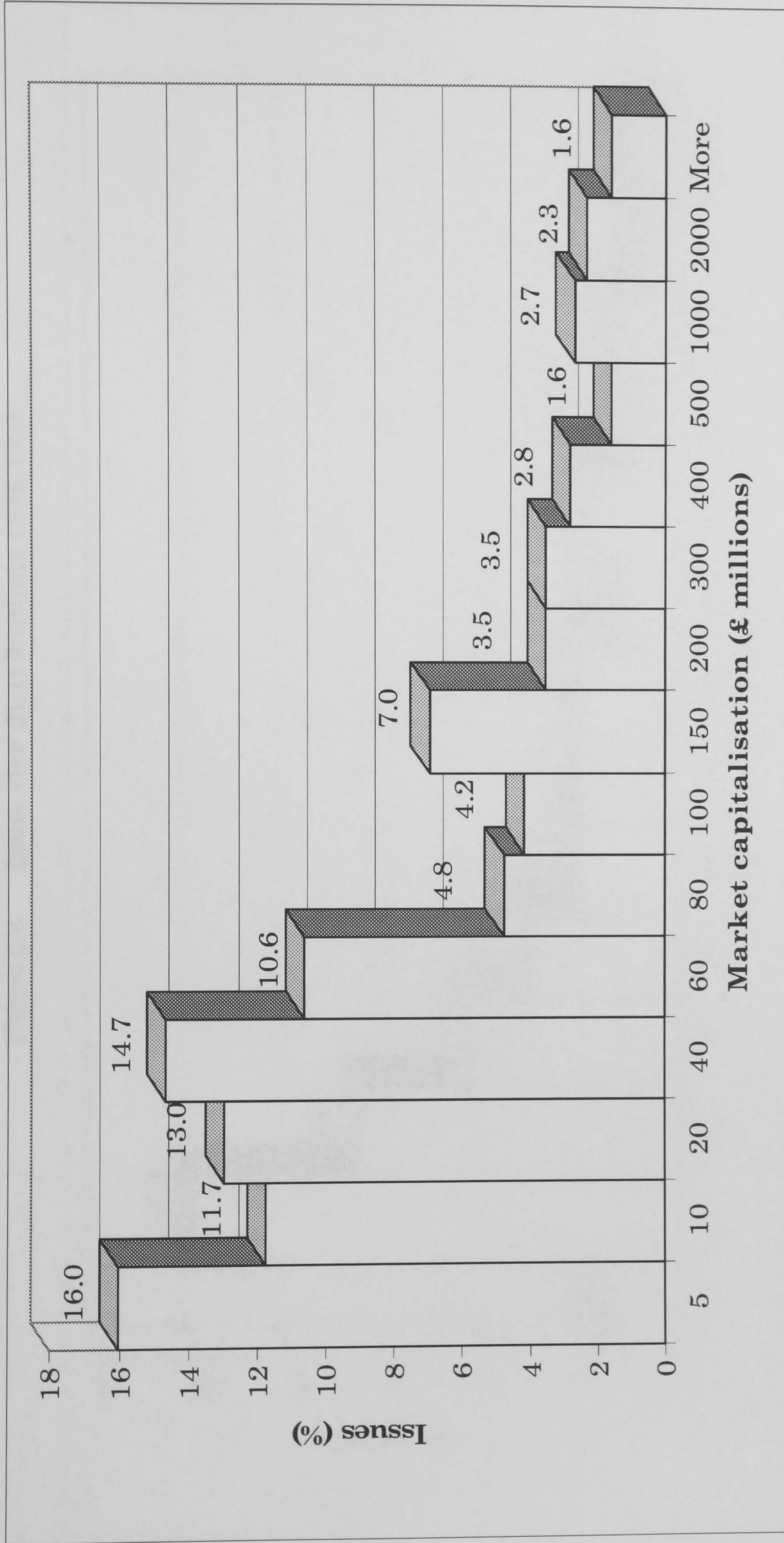


Figure 5.4 Issue size distributions 1986-1995

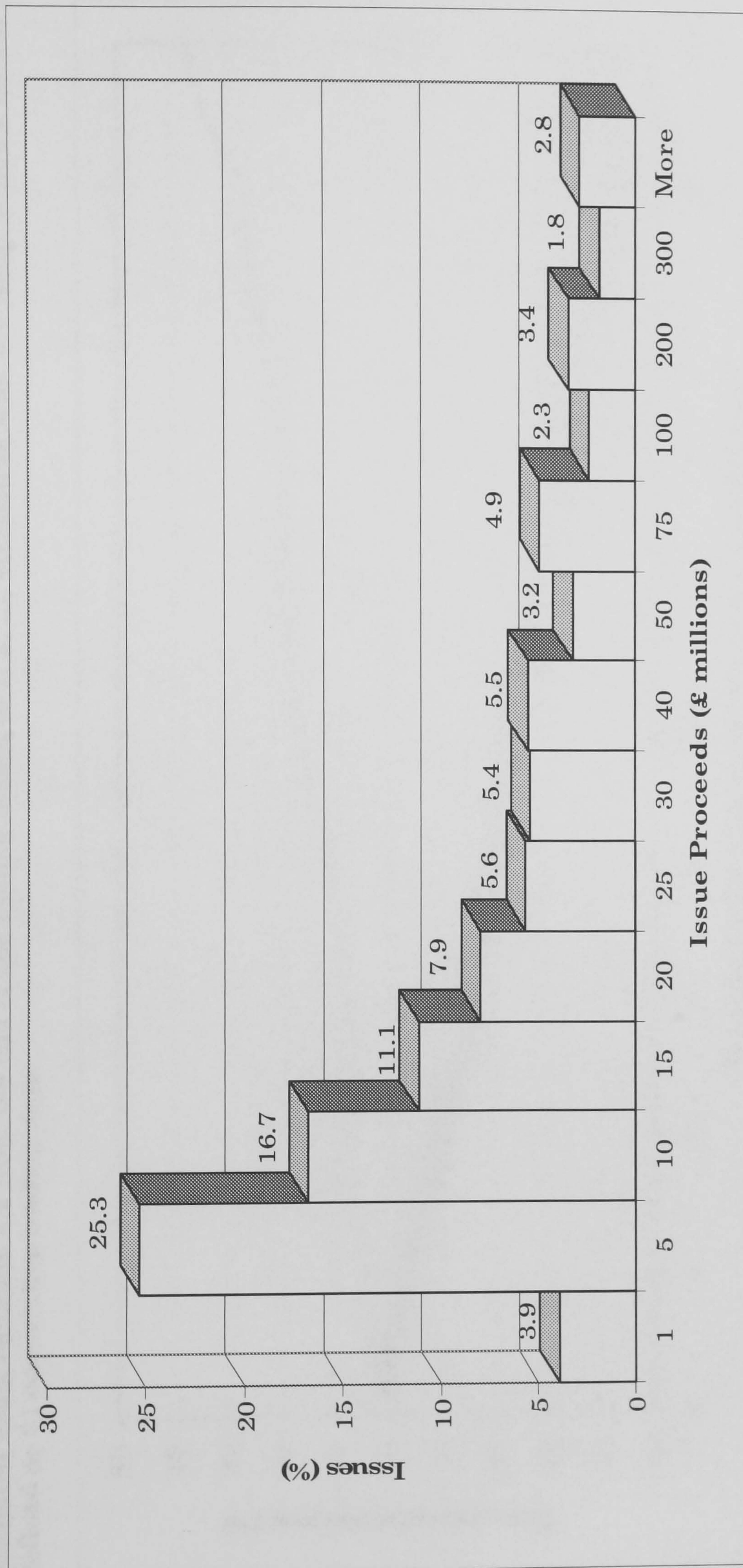
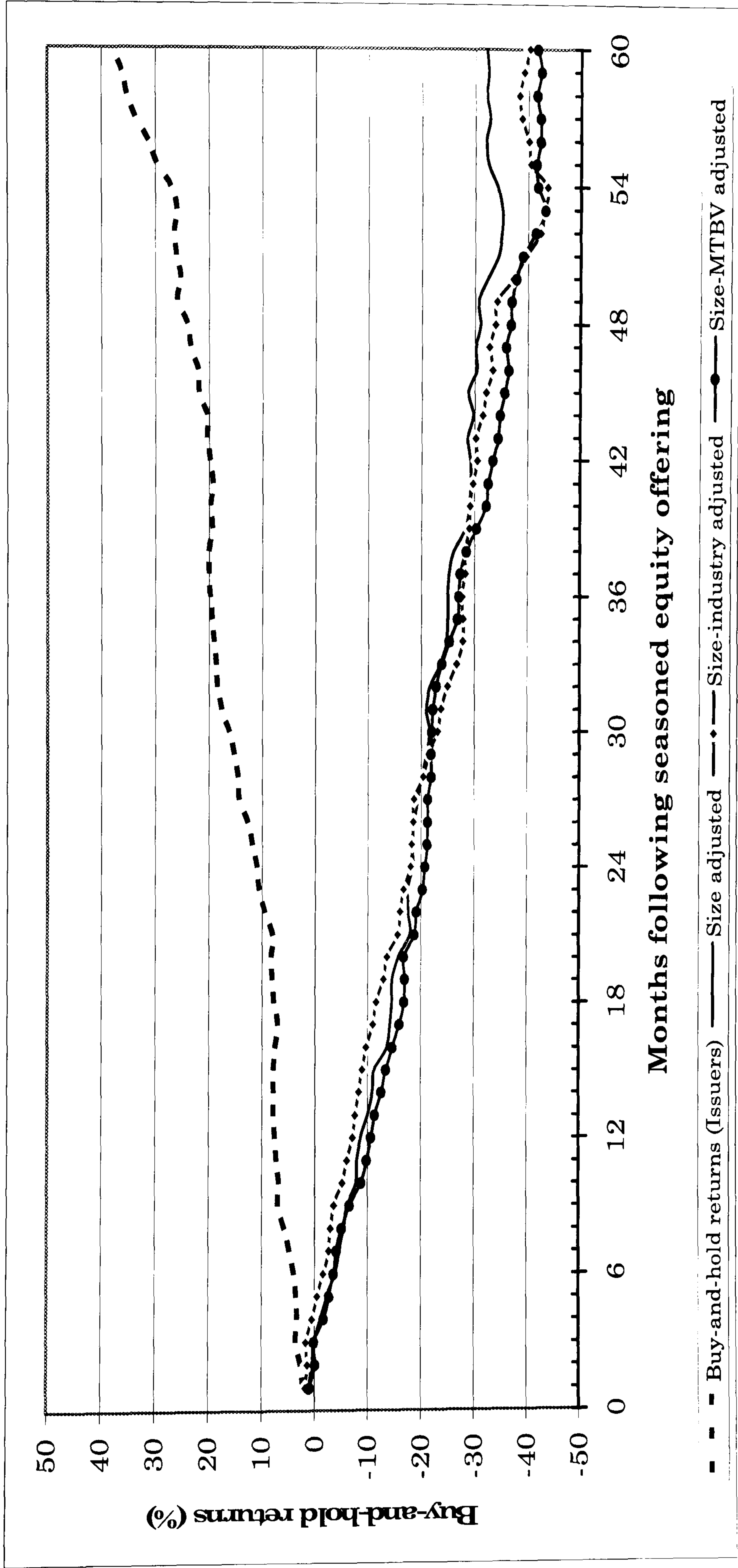


Figure 5.5 Trends in buy-and-hold returns

Mean buy-and-hold returns following rights issues made by UK firms at the London Stock Exchange during the period 1986-1995. The plot includes issuing firms' buy-and-hold returns and adjusted (abnormal) buy-and-hold returns computed using equation 4.6 from the end of the issuing month to 1, 2, ..., 60 months after the issue, where a month is defined as 21 consecutive trading days.



Appendix 5.1 Industry Classification

This appendix presents a refined industry classification based on the FTSE Actuaries Industry Classification System. The system, established by the Financial Times, the London Stock Exchange and the Institute of Actuaries, provides a model classification system to reflect the industrial profile of the current economy. The first column shows groupings as used in this study whereas the second column shows the FT-SE sectors as they were, effective from 3 January 1995. For companies delisted before this date, previous classification and details of the principle activities are obtained and translated into the group they would have been had they traded to and beyond 1995. The Stock Exchange Yearbooks were the main source of information. To balance between the power of statistical test and groups of most similar companies, a minimum of 25 observations restriction is imposed (see, for example, Ritter, 1991; Spiess and Affleck-Graves, 1995). An exception to this rule is the building materials and engineering vehicles categories, which have been merged with their most related sectors. In addition, properties are grouped separately rather than being aggregated in the financials.

Industry	FTSE sectors included	No. of Offerings	
1. Mining	12. Extractive industries	6	
	15. Oil, Integrated	1	
	16. Oil exploration & Production	22	29
2. Building	21. Building & Construction	64	
	22. Building Materials & Merchants	33	97
3. Other industrials ^{a,b}	23. Chemicals	18	
	24. Diversified industrials	19	
	34. Household goods	11	48
4. Electronic & Electrical	25. Electronic & electrical equipment		36
5. Engineering	26. Engineering	106	
	27. Engineering, vehicles	23	129
6. Paper & Printing	28. Paper, Packaging & Printing		32
7. Textiles	29. Textiles & Apparel		45
8. Food & Breweries	31. Breweries	9	
	32. Spirits, Wines & Ciders	3	
	33. Food Producers	34	46
9. Pharmaceuticals	36. Health care	24	
	37. Pharmaceuticals	6	30
	41. Distributors		56
10. Distributors	42. Leisure & Hotels		44
11. Leisure & Hotels	43. Media		30
12. Media	44. Retailers, Food	10	
13. Retailers	45. Retailers, General	31	41
	48. Support services		48
14. Support services	49. Transport	13	
15. Other services ^{a,c}	51. Other services & Businesses	17	
	66. Telecommunications	1	31
	71. Banks	4	
16. Financials	72. Banks, Merchant	3	
	73. Insurance	9	
	74. Life Assurance	2	
	77. Other financials	6	
	80. Investment trusts	4	28
	79. Property		48
	17. Property		
Total sample			818

^a Sectors with fewer than 25 issuers are shown as "others" under their respective economic groups, e.g., "Other Industrials" or "Other Services".

^b The "Other industrials" group includes 11 household goods, which are closely related to general industry, although they are normally classified as consumer goods.

^c One utility is also included in the "Other Services" category.

Appendix 5.2 Descriptive Statistics of SEOs by Industry

	No. of Offerings	Mean	Median	Standard Deviation	Minimum	Maximum
1. Mining	29					
Proceeds (Nominal £millions)		63.48	17.47	103.82	0.37	486.00
Proceeds (£million, 1995)		77.23	22.60	129.70	0.48	628.79
Market capitalisation (£millions)		205.11	50.51	342.10	2.08	1224.76
Market-to-book value ratio		5.08	1.72	6.96	0.85	27.42
Proceeds/market capitalisation (%)		104.20	26.04	237.40	6.24	962.00
2. Building	97					
Proceeds (Nominal £millions)		39.92	18.50	68.45	0.25	459.00
Proceeds (£million, 1995)		45.72	23.11	73.89	0.26	459.00
Market capitalisation (£millions)		153.49	55.59	297.64	0.32	1841.95
Market-to-book value ratio		1.63	1.29	1.09	0.15	6.53
Proceeds/market capitalisation (%)		48.90	31.66	67.60	7.33	557.00
3. Other industrials	48					
Proceeds (Nominal £millions)		37.84	18.55	49.00	1.60	193.00
Proceeds (£million, 1995)		43.30	23.26	55.30	1.89	237.48
Market capitalisation (£millions)		176.68	75.08	267.47	1.56	1289.70
Market-to-book value ratio		2.51	2.33	1.57	0.83	10.79
Proceeds/market capitalisation (%)		49.10	25.86	119.60	10.84	846.00
4. Electronic & Electrical	36					
Proceeds (Nominal £millions)		16.14	9.09	27.24	0.30	154.00
Proceeds (£million, 1995)		18.52	10.40	29.14	0.46	165.75
Market capitalisation (£millions)		83.15	27.31	170.71	1.85	835.39
Market-to-book value ratio		3.69	2.29	3.86	0.32	17.80
Proceeds/market capitalisation (%)		42.04	20.98	87.50	6.62	543.70
5. Engineering	129					
Proceeds (Nominal £millions)		26.61	10.90	46.41	0.70	307.00
Proceeds (£million, 1995)		32.21	14.02	57.57	1.07	342.86
Market capitalisation (£millions)		104.25	35.50	226.47	1.44	1705.86
Market-to-book value ratio		2.82	1.70	7.44	0.39	84.33
Proceeds/market capitalisation (%)		56.30	31.47	82.20	10.09	708.00
6. Paper & Printing	32					
Proceeds (Nominal £millions)		31.67	20.30	44.12	1.19	197.40
Proceeds (£million, 1995)		40.96	22.89	61.82	1.19	300.80
Market capitalisation (£millions)		99.06	47.49	129.95	1.55	493.71
Market-to-book value ratio		2.08	1.84	0.96	0.85	4.16
Proceeds/market capitalisation (%)		57.93	38.37	57.90	8.95	283.20
7. Textiles	45					
Proceeds (Nominal £millions)		11.57	2.90	15.68	0.40	65.00
Proceeds (£million, 1995)		13.67	4.20	18.11	0.43	75.60
Market capitalisation (£millions)		37.96	12.37	58.42	0.32	243.12
Market-to-book value ratio		2.26	1.59	1.89	0.12	10.22
Proceeds/market capitalisation (%)		65.70	29.07	138.94	6.92	859.40
8. Foods & Breweries	46					
Proceeds (Nominal £millions)		50.06	11.85	105.06	0.40	557.90
Proceeds (£million, 1995)		59.37	12.86	118.54	0.56	622.88
Market capitalisation (£millions)		267.71	19.30	740.80	1.07	3716.23
Market-to-book value ratio		3.69	2.05	5.36	0.45	27.96
Proceeds/market capitalisation (%)		51.70	31.87	63.40	9.84	381.00
9. Pharmaceuticals	30					
Proceeds (Nominal £millions)		77.32	21.40	235.71	1.95	1300.00
Proceeds (£million, 1995)		85.45	25.58	251.05	2.07	1377.63
Market capitalisation (£millions)		408.16	76.72	1132.16	1.23	5904.30
Market-to-book value ratio		10.35	3.60	17.43	0.53	76.62
Proceeds/market capitalisation (%)		45.70	24.65	72.00	7.00	358.00

Appendix 5.2 (continued)

	No. of Offerings	Mean	Median	Standard Deviation	Minimum	Maximum
<i>10. Distributors</i>	<i>56</i>					
Proceeds (Nominal £millions)		11.05	8.65	10.35	0.50	44.00
Proceeds (£million, 1995)		13.22	10.10	12.38	0.73	47.98
Market capitalisation (£millions)		39.97	19.19	68.13	1.34	403.43
Market-to-book value ratio		2.18	1.98	1.33	0.20	7.39
Proceeds/market capitalisation (%)		67.39	34.63	125.84	8.21	858.20
<i>11. Leisure & Hotels</i>	<i>44</i>					
Proceeds (Nominal £millions)		41.30	11.50	89.77	0.60	464.00
Proceeds (£million, 1995)		52.31	13.46	113.65	0.91	518.04
Market capitalisation (£millions)		142.73	17.37	378.79	1.38	2115.16
Market-to-book value ratio		2.44	1.65	2.18	0.42	9.32
Proceeds/market capitalisation (%)		72.80	45.67	101.50	2.53	626.00
<i>12. Media</i>	<i>30</i>					
Proceeds (Nominal £millions)		53.26	10.75	130.50	1.30	630.00
Proceeds (£million, 1995)		73.50	13.11	189.40	1.38	921.84
Market capitalisation (£millions)		110.41	23.16	220.13	0.98	886.79
Market-to-book value ratio		7.29	3.67	9.22	0.71	33.84
Proceeds/market capitalisation (%)		63.90	45.54	58.20	9.26	267.90
<i>13. Retailers</i>	<i>41</i>					
Proceeds (Nominal £millions)		78.97	9.00	144.07	1.00	572.00
Proceeds (£million, 1995)		91.50	13.14	161.75	1.18	638.62
Market capitalisation (£millions)		406.99	24.84	979.65	2.60	4656.34
Market-to-book value ratio		3.30	2.78	3.05	0.43	17.91
Proceeds/market capitalisation (%)		48.60	29.56	50.40	10.51	240.00
<i>14. Support Services</i>	<i>48</i>					
Proceeds (Nominal £millions)		31.38	8.30	122.32	0.14	837.00
Proceeds (£million, 1995)		42.15	9.88	177.24	0.14	1224.73
Market capitalisation (£millions)		67.92	23.36	220.63	0.82	1533.36
Market-to-book value ratio		8.98	4.61	11.90	0.81	62.39
Proceeds/market capitalisation (%)		58.00	31.15	89.80	9.25	559.00
<i>15. Other services</i>	<i>31</i>					
Proceeds (Nominal £millions)		33.20	10.50	79.35	0.52	441.80
Proceeds (£million, 1995)		37.84	14.17	84.02	0.58	468.18
Market capitalisation (£millions)		132.42	23.19	410.87	1.40	2285.98
Market-to-book value ratio		6.87	2.31	23.67	0.41	133.91
Proceeds/market capitalisation (%)		70.00	44.96	122.40	9.49	689.00
<i>16. Financials</i>	<i>28</i>					
Proceeds (Nominal £millions)		127.48	22.45	232.94	0.80	921.00
Proceeds (£million, 1995)		167.60	29.42	321.91	1.04	1284.59
Market capitalisation (£millions)		600.82	131.56	972.05	3.44	3348.80
Market-to-book value ratio		5.40	1.37	10.13	0.48	41.70
Proceeds/market capitalisation (%)		32.80	29.30	24.10	0.56	100.00
<i>17. Property</i>	<i>48</i>					
Proceeds (Nominal £millions)		26.44	14.41	38.73	0.76	221.90
Proceeds (£million, 1995)		30.46	16.96	41.30	0.79	235.15
Market capitalisation (£millions)		75.24	22.88	166.20	1.43	1059.38
Market-to-book value ratio		1.24	0.97	1.04	0.22	6.52
Proceeds/market capitalisation (%)		84.30	54.05	98.20	17.51	548.00

CHAPTER SIX

LONG-RUN STOCK PERFORMANCE AND ISSUE AND FIRM CHARACTERISTICS

6.1 Introduction

This chapter investigates further the buy-and-hold abnormal returns reported in the previous chapter, of which primary objective is to provide additional insight into the long-run underperformance in the UK rights issuing firms. Since the results are based on average returns, it is possible that some firms outperform substantially an appropriate benchmark but other firms significantly underperform. Identification of the factors that may help to determine firms that are likely to outperform and firms that are likely to underperform is, therefore, an interesting issue of empirical research. Finding consistently negative long-run return patterns across categories may suggest that investors were too optimistic about the long-run prospect of the firms and are getting more realistic through time, rather than the abnormal returns being partly a result of varying issue and firm characteristics.

Numerous studies have investigated the long-run abnormal returns following rights issues by UK firms (Marsh, 1979; Levis, 1995; Michailides, 2000; Abhyankar and Ho, 2001). All provide evidence of long-run underperformance. However, none of them explores the potential of the different issue and firm characteristics in explaining the long-run abnormal returns patterns across issuers. This chapter hopes to fill in that gap in the UK SEO literature.

To achieve this objective, the buy-and-hold abnormal return patterns are differentiated into quintiles or otherwise, as the case may be, of various issue and firm characteristics. Following previous literature, the chapter uses the following issue characteristics; issue size, issue frequency, issue purpose, and the issue volume and year of offering. It also uses the following firm characteristics; firm size, age since IPO date, market-to-book ratio and

industry.⁶¹ Then a number of hypotheses were tested according to the theoretical or empirical predictions.

The remaining part of the chapter is organised as follows. Section 6.2 discusses, examines, and provides results based on issue characteristics. Section 6.3 discusses, examines, and provides results based on firm characteristics. Section 6.4, summarises and provides conclusions to the chapter.

6.2 Post-offering Performance by Issue Characteristics

To investigate the nature of the observed average long-run underperformance, the sample of rights issues is partitioned in various ways based on issue characteristics. The objective is to find out whether the observed underperformance is concentrated in various issue size groups, issue frequency, and issue purpose categories.

The observed underperformance is similar across issue size quintiles irrespective of how size is defined. It is also unaffected by the failure of the sampling procedure used in the previous chapter, which allowed multiple rights issuers to enter the sample.⁶² Across the main stated reasons of issue (investments, acquisitions, and repaying debt), there is no evidence of significant variations. However, a few important variations emerged. Although the underperformance is observed across most offering years, it seems to disappear in the later years of the sample and issuers issuing during the low issuing activity periods seem to show higher abnormal returns relative to issuers issuing during the high issuing activity period. The latter evidence is however, weak and benchmark sensitive. The underperformance is more severe for issuers who had at least two other equity issues (rights issues or otherwise) during the five-year period prior to the rights issue under consideration, relative to a control group of issuers who had issued none in the same period and did not

⁶¹ Various sources are used to obtain the required data for each characteristic. For example, the NEW file on the Datastream, *Extel Financial* database and publications, *KPMG Peat Marwick McLintock New Issue Statistics*, and a number of stock exchange publications (the *Stock Exchange Official Yearbooks* and the *Quality of Markets Review*).

⁶² Other studies e.g., Loughran and Ritter (1997) control the sample to allow an issuer back into the sample only if there has been five years since its last issue to reduce the possibility of the underperformance being due to dependence in the issues.

issue any in the five-year post-offering period. Surprisingly, issuers who did not issue prior to the issue under consideration but issued at least twice (rights issue or otherwise) in the five-year post-offering period do not show significant underperformance.

6.2.1 Year of offering and issue volume

The issuing environment may differ from year to year. This section investigates whether the long-run underperformance is concentrated in certain years during the sample period. Firstly, the mean buy-and-hold abnormal returns are estimated and tested for significance in each calendar year. Secondly, from Table 5.1, the rights issues in the sample seem to be clustered over time. Loughran and Ritter (2000) argue that if the security offerings are motivated by the timing behaviour on the part of managers then such issues should logically be clustered in time, where the high-issue volume periods should be associated with greater misvaluations. Consequently, issuers during periods of higher misvaluations should suffer more underperformance as the market re-adjusts. The following hypothesis is tested:

H6.1 *There is no difference in underperformance between firms that conducted rights issues during the period of high equity issuing activities and firms that conducted rights issues during the period of low equity issuing activities.*

To accomplish this, the sample is partitioned into those issued in years perceived as high- and low-volume periods, the cut-off being the median number of issues over the entire sample period (Spiess and Affleck-Graves 1999). The median number of issues is 86.5. The high-volume period issues are those issues that occur during a year in which the total number of issues is at least the median number of issues. Thus, years 1986, 1987, 1988, 1991 and 1993 are the high-volume years⁶³. The results are presented in Table 6.1 relative to size-

⁶³ Using this definition on the Datastream population of rights issues during the period the median number of issues is 145, with only years 1994 and 1988 switching places. A different approach is used in Bayless and Chaplinsky (1996). They rank the three-month moving average of the monthly issue volume, scaled by total month-end value of outstanding equity of NYSE, AMEX and NASDAQ. They then define HOT periods as periods when SEO volume is in the top quartile and cold when is in the bottom quartile. Choe, Masulis and Nanda (1993), on the other hand, define hot period in terms of

matched nonissuers, Table 6.2 relative to size and industry-matched nonissuers, and Table 6.3 relative to size and market-to-book ratio matched nonissuers.

Firstly, an examination of the three tables indicates significant underperformance in most offering years. Over the one-year holding period, 3 years have issuers performing better than comparably sized non-issuers do, and 2 years have issuers performing better than comparably sized nonissuers in the same industry do. One year has issuers who performed better compared to size-matched nonissuers with same market-to-book ratios. Over the three-year holding period, one out of ten years outperformed the corresponding matched firms regardless of the benchmark used. Over the five-year holding period, two years on average, have better buy-and-hold returns than their matched counterparts. Of particular interest, however, are the years 1989, 1994 and 1995. The underperformance is much weaker in 1989 and it seems to disappear in 1994 and 1995.⁶⁴

Secondly, over the three-year period, “High” issuers yield significant buy-and-hold abnormal returns of -34.68% (at 0.01 levels) against size matched nonissuers compared to insignificant -10.34% of the “Low” issuers. The difference of means test is statistically significant ($t = 2.29$). Against size and industry, issuers in the “High” group show significant negative buy-and-hold abnormal return of -34.61% (at 0.01 levels) compared to significant -16.95% (at 5% level) and the difference of means test is statistically significant at 0.10 levels. Similar results are obtained for the two-year holding period (not reported here). However, the null hypothesis could not be rejected over the four-, and five-year horizons against either size or size and industry-matched firms. In addition, it could not be rejected over any holding period when abnormal returns were measured against size and market-to-book ratio-matched firms. In conclusion, therefore, firms issuing during the years when there is low issuing activities show not as much underperformance as those issuing during years

economic conditions. Hot periods are the upturns of the business cycle, the periods from the trough to the peak and cold periods as the downturns of the business cycle, the periods from the peak to the trough.

⁶⁴ These results are similar to those reported in the studies by Loughran and Ritter (1995), and Spiess and Affeck-Graves (1995) in which year 1989 is included, whereas Abhyankar and Ho (2001) report similar three-year results for 1994 and 1995.

when there is high volume of issuing activities. However, these results are sensitive to the benchmark specifications.

This evidence is weakly consistent with the window of opportunity hypothesis highlighted in Loughran and Ritter (1995:49) which predicts that firms selling stocks during high issue volume period would underperform severely. Firms conducting rights issues during the low-volume period may be seen as firms having positive NPV projects, and that the managers issue new shares to raise the capital required to finance them. Issuing during high-volume period may be seen as overvaluation exploitation, and investors revise the share price downwards. Even if one argues that rights issues involve existing shareholders hence no motive for price exploitations, it can still be argued, from the cost point of view, that managers might want to time this offerings to coincide with periods of mispricing in order to attain more favourable issuing terms.

From various studies, it has been shown that similar to public offerings, rights issues also follow periods of high stock performance (Marsh, 1979; Levis, 1995; Abhyankar and Ho, 2001; as examples). This raises the need to investigate further the nature of the link between the timing of rights issues and overvaluation exploitation perhaps by examining the level of misvaluation around the offering as suggested in Jindra (2001). The fact that this is not done to exploit investors because rights issues are made to existing shareholders, does not necessarily mean there are no other reasons why managers might want to time rights issues at these times. Such evidence would enrich our understanding of the link between overvaluation and the timing of rights issues.

Another equally important issue that can be raised from these results is the seemingly disappearing underperformance in the last offering years. One would naturally ask whether the disappearance reflects the common trends in financial markets where some other anomalies have been shown to disappear over time. For example, Schwert (2002) reviews a number of anomalies and shows that some of the long-standing anomalies, e.g., the size and the value anomalies have disappeared in the recent years while some reduce in magnitude. Does this suggest that the market arbitrages these anomalies

away? Schwert (2002) suggests that an out-of-sample investigation could help to determine whether the underperformance anomaly disappears over time.

6.2.2 Issue size

The size of issue proceeds may signal information to investors about the future cash flow potential of the firm. Investors are assumed able to make an unbiased estimate of the issuing firm's funding needs and use such information to predict the type of security that the firm will issue (Bayless, 1994). However, in the Myers and Majluf's (1984) information based model, it is shown that managers acting in the best interest of the current shareholders would be reluctant to issue equity if they believe that the firm's shares are undervalued. The model also assumes that the firm has a single all-or-nothing investment opportunity whose cash requirements are fixed and known by all investors. In addition, Krasker (1986) relaxes this assumption and allow the firm to choose not only whether to issue equity but also how much to issue, and shows that firms tend to issue debt when making large issue to reduce adverse selection cost. Therefore, when a firm makes a large equity issue it could mean either it has exhausted its debt capacity or it is highly uncertain about its future cash flows. Krasker's model predicts that in a sample of firms that issue new equity the stock price will be negatively correlated with the issue size.

The announcement period evidence based on this prediction is mixed. For example, Asquith and Mullins (1986) find significant inverse relationship between the announcement-period's excess returns and the relative size of the issue (proceeds/pre-issue market capitalisation) for a sample of US industrial issuers. The authors interpret the finding as meaning that, *ceteris paribus*, increasing the size of an equity issue results in an additional reduction in firm value on the day of announcement. Contrarily, Mikkelson and Partch (1986) do not find significant relationship between the stock price effects and either the relative offering size or new financing provided by the offering. They argue that their finding may indicate the market forms accurate forecasts of firms financing requirements such that the type of financing rather than the amount of financing is the most pertinent information conveyed at the announcement.

To investigate whether the long-run underperformance can be explained by the size of the issue, the average buy-and-hold abnormal returns are partitioned into quintiles of both gross proceeds expressed in constant 1995 pounds and relative to pre-offering market capitalisation and test the following hypothesis;

H6.2 *There is no difference in the average buy-and-hold returns between issuers making larger issues (larger relative to pre-offering market value) and issuers making smaller issues (smaller relative to pre-offering value).*

Table 6.4 presents the results for the real issue proceeds quintiles (Panel A) and relative issue proceeds quintiles (Panel B). Tables 6.5 and 6.6 presents the results in a similar fashion but the abnormal returns are measured against, respectively, the size and industry-matched nonissuers and the size and market-to-book ratio-matched nonissuers. The results show significant underperformance in all issue-size quintiles and in almost all holding periods regardless of the way issue size is measured. More importantly, the null hypothesis of no difference in the mean buy-and-hold abnormal returns between issuers of small, and issuers of large issue amounts (absolute or relative issue size) could not be rejected. These findings are consistent with the evidence in Cai (1998), who finds significant underperformance following Japanese rights issues across real issue size quartiles, and equally fail to reject the same null hypothesis.

These results may imply a number of things. Firstly, it could mean that big issue size indicates investment financing needs, rather than the extent of cash flow problem. Secondly, it could mean that news in size is fully incorporated and therefore there is none left to influence the long-run returns.

6.2.3 Issue frequency

Despite the ever-growing evidence that announcement of stock issuance leads to significant reduction in shareholders' wealth both in the short- and in the long-run, some firms issue common stock more frequently than others do. There is evidence that relates issue frequency and announcement period abnormal returns (see for example, McDaniel, Madura and Akhigbe (1994)).

The finance literature provides several reasons for companies to make frequent issues of common stock. Firstly, companies may make frequent offerings in the quest for establishing a reputation. This arises from the evidence that the size of the share price changes following equity issue announcement varies inversely with the predictability of the announcement (Smith, 1986), suggesting that new equity offering announcement from a frequent (reputable) issuer comes to the market as a little surprise. In the short-run, the company's value will suffer less compared to cases where infrequent (less reputable) issuers announce an equity offering. In the long-run, however, the company's actual status becomes more certain with subsequent information releases and the market further adjusts the price accordingly.

Secondly, frequent issuers may be firms that grow faster and invest better than do their industry counterparts. Equity offering announcement from such companies comes to the market as no surprise as it may signal favourable future investment as well as favourable changes in operating cash flows. Thirdly, companies may bet on the possibility that high offering frequency gives investors a series of data to judge their motive. For example, on the one hand, investors may observe from the previous issues that little unfavourable asymmetric information was revealed and therefore, they become less suspicious of the possibility that the company is issuing equity to exploit the new shareholders. As a result, companies that are reputable as frequent issuers may still issue equity to enjoy less unfavourable offering terms. On the other hand, managers of frequent equity issuers may issue because they have noticed a negligible reactions to previous offering announcement.

Table 6.7 to Table 6.9 investigate whether the long-run stock performance of frequent issuers differ from that of infrequent issuers of ordinary shares. The analysis involves comparing stock buy-and-hold abnormal returns of a number of groups with that of a control group, made up of firms that issued only once.

H 6.3 *There is no difference in underperformance between frequent and infrequent issuers.*

Results are presented in Tables 6.7 to 6.9 for the size, size and size and industry, and size and market-to-book ratio matched nonissuing firms, respectively. Panel A of each table, analyses the post-offering stock performance by issue frequency where the definition of issue frequency is limited to the rights issues during the sample period 1986-1995. This analysis serves two purposes. Firstly, it acts as a robustness check for the stock performance, controlling for repetitive rights issues. 410 issues were conducted by firms that made one rights issue only over the sample period. These one-time-only issuers significantly underperform their nonissuing counterparts in all horizons irrespective of the benchmark used. This indicates that the underperformance reported in Table 5.4 is not driven by dependence in the multiple offerings.

Secondly, it offers a comparison of the performance of SEOs between issuers making multiple issues over the sample period and the control group of one-time-only issuers. If an issuer makes multiple issues that overlap during the sample period and if each rights issue has its own long-run underperformance then one would expect multiple issuers to show more severe underperformance. Two more groups are identified and their buy-and-hold abnormal returns are compared with those of the control group of one-time-only issuers. The group of major interest is the ≥ 3 group, which contains issues given that issuers made at least three rights issues over the sample period. Over the one-year horizon, the frequent rights issuers show insignificant underperformance irrespective of the benchmark used. The size-adjusted and the size and industry-adjusted abnormal returns over the one-year holding period are significantly higher for the frequent rights issuers than for the control group. The difference of means test is not significant for the size and market-to-book ratio-adjusted abnormal returns. Over the longer horizons, both groups underperformed significantly. However, the null hypothesis could not be rejected at 0.1 level against any of the benchmarks used.

Defining issue frequency based on rights offerings alone may not present the whole picture given the fact that during the sample period, firms used more than just rights issues to raise equity capital. Panel B of each Table, concentrates on all issuers who did not make any issue during the five-year period after the rights issue under consideration. Out of these, a control group

of 149 issues is isolated, whose issuers did not offer any form of equity for cash during the five-year period prior to the rights issue under consideration. The remaining groups are of issuers, who made one issue, two issues, and ≥ 2 issues during the 5-year period before the offering and did not make any equity issue during the post-offering period. If the market interprets frequent issuers (reputable) as issuers with more profitable projects, then one would expect to find higher abnormal returns for frequent issuers prior to the offering. It is assumed here that investors would interpret an issuer of rights issues given that the issuer had made at least two other equity issues in the previous five-year period as a frequent/reputable issuer.⁶⁵

The buy-and-hold abnormal returns are then compared between the two or more issues group and the control group. The results show strong evidence that frequent issuers suffer more wealth loss than the one-time issuers in almost all holding periods irrespective of the benchmark used. There are two possible explanations for these results. Firstly, investors may interpret frequent issuers as having unfavourable changes in internal operating cash flows, making them return to the market for additional funding almost every time they have new project. Secondly, frequent issues may signal a growing possibility of a building up of free cash flow, which may then be used unprofitably by management. In either case, the market may revise the price downwards. Then possibly, as consequent releases of information fail to confirm the management's intension, the market continues with the downward revaluation. Notice, however, that the results may not be independent of the lack of knowledge on how the market reacts, both in the short-run and in the long-run, to equity offerings made through offering forms other than rights issues or placings included in the determination of issue frequency. Only Slovin *et al.* (2000) and Abhyankar and Ho (2001) show evidence of positive market reaction to the announcement of placings and open offers, respectively, in the UK. The results also add to the announcement period evidence reported in McDaniel *et al.* (1994), meaning that the evidence of a significant frequent issuer-control differentials reported in their study may not be limited to the announcement period alone.

⁶⁵ This definition is a limited version of one used in McDaniel *et al.* (1994) in which frequent issuer issued at least four times during the entire sample period.

In panel C of each Table, the possibility that the post-offering stock performance might suffer from the effects of overlapping issues in the post-offering period is investigated. The same control group of issuers who did not issue any public equity during the -5 to $+5$ -year periods relative to the rights offering under consideration is used, against which issuers who did not issue in the pre-offering period but issued once, and at least twice, in the post-offering period are compared. If there were overlapping effect, one would expect that post-offering frequent issuers would show poorer performance. Surprisingly, issuers with two or more issues in the post-offering period outperformed their non-issuing counterparts. In all benchmarks, almost all wealth relatives are higher than one. Against the control group, abnormal returns of the two or more issues group are higher, albeit insignificantly different. These results may also suffer from lack of the knowledge about the long-run behaviour of the buy-and-hold returns of the other forms of offering included in the determination of post-offering issue frequency.

6.2.4 Usage of funds

Funds raised through an equity offer are used for a variety of purposes such as to finance investment projects, both internal and external, to repay the company's debt, and so on. This section investigates whether information about the purpose for which the firm raises new equity capital can explain the long-run stock performance of rights offering firms in the UK.

The investigation is motivated by a number of factors. Firstly, the theories of Myers and Majluf (1984), and Miller and Rock (1985), do not provide a full explanation of the price effects, because they do not predict the impact of offerings made to refinance debt (Mikkelson and Partch, 1986). This suggests that the market might react differently to information that the offering proceeds would be used to refinance debt. The market may interpret news of an issue to refinance debt as reflecting the firm's future cash flow problems. Contrarily, the market may interpret the news of an issue to finance a new project as a signal of possible increases in future profitability, which would potentially lead to increases in dividends and capital gains.

Secondly, funds from an SEO contribute to increased free cash flow of the company. According to the free cash flow theory (Jensen, 1986), investors will be concerned that the funds may not be used for a profitable investment but instead be wasted in value-destroying projects that serve the private benefits of the management. If the disclosure of the planned uses of the funds raised can convince investors that the issue is motivated by the profitability of the project rather than overvalued assets, the issue announcement would be associated with less negative price reaction.

Thirdly, other studies suggest that even for the funds used to finance investments, there will be differences in the market reaction between funds used for the company's internal projects, such as capital expenditure projects,⁶⁶ and funds used to finance external projects such as take-overs (e.g., Suzuki, 2000).⁶⁷

Previous studies concentrated on the impact the stated reason of the issue has on the announcement period excess returns. Masulis and Korwar (1986) find no significant difference in the announcement period abnormal

⁶⁶ See Trueman (1985) for a signalling model that predicts positive stock price reaction to capital expenditure announcements. See empirical evidence in McConnell and Muscarella (1985) for announcements of capital expenditure plans, Chung, Wright and Charoenwong (1998) for capital expenditure plans by firms with and without profitable opportunities. See also reaction to research and development (R&D) expenditure announcements (Chan, Martin and Kensinger, 1990; Woolridge and Snow, 1990; Zantout and Tsetsekos, 1994).

⁶⁷ Suzuki (2000) points out that in the UK, SEOs raising funds for acquisition provide specific financial information of the target firm (public or private) from which investors can make an informed judgement on the profitability of the project. In addition, in many acquisition-related SEOs the terms would have been negotiated and agreed upon between managements, increasing investors' certainty that the money will be used for the intended acquisition. In contrast, when the proceeds from an SEO are invested in the issuer's own investments (e.g., plant expansion, product research and development), or when the proceeds are used to repay existing debt, the information provided in a prospectus is often less specific. The Listing Rules do not require detailed disclosure about the internal investments of the issuer although from time to time, a firm may voluntarily disclose detailed business plans including the breakdown of internal investment projects at the time of an SEO announcement. However, Suzuki points out that it is not common for an issuing firm to do so. Moreover, when a company issues an SEO to invest in an internal project, the proceeds will generally be pooled in the issuing firm's cash account before the actual investment action is taken. Once the money is handed out to the management, it would be more difficult for investors to verify whether it is invested as stated.

returns (against a comparison period)⁶⁸ in a sample of non-rights SEO announced by US industrial firms over the period 1963-1980 between when proceeds are used for debt reduction and when they are used for capital expenditure. In contrast, Mikkelson and Partch (1986) find evidence that issues intended to refinance debt have significantly more negative stock price reaction than issues intended to finance capital expenditure in a sample of SEO by US firms over the period 1972-1982.

For the UK market, the trend is more or less similar. Slovin, Sushka and Lai (2000) find significantly higher announcement period abnormal returns for insured rights over the period 1986-1994 when the proceeds are used to fund acquisition than when they are used for all other purposes. When the proceeds from insured rights are used to reduce debt the issuers have the lowest excess return, but insignificantly different from the excess returns when they are used for all other purposes. They conclude that information on the use of proceeds has a limited impact on share price reaction to equity issuance in the UK. Michailides (2000) also examines stock market reaction to UK rights issue announcements 1986-1995 and report the highest negative and significant market reaction for issues used to repay debt, but the least and insignificant negative reaction to issues used to finance investments. Suzuki (2000) finds that for the UK rights issues planned to finance internal projects (e.g., capital expenditure developments), the share price reacts more unfavourably than for when the funds are planned to fund external projects (e.g., take-over activities). Suzuki argued that the results might suggest a case where investors are more concerned about the verifiability and profitability of the issuing company's intended investment, rather than overvaluation of shares when managers decide to issue equity.

This chapter extends this investigation to long-run abnormal returns. The objective is to investigate whether information about issue purpose can explain the long-run underperformance following rights issues. Proceeds from most equity issues are used to finance long-term capital projects (Masulis and Korwar, 1986). Because capital expenditure and other investment projects take

⁶⁸ This is defined in the study as the average daily return for the 60 trading days immediately following the announcement period.

long to yield it is highly unlikely that the market's review of share price in relation to the offer announcement will end within the announcement period. If this holds then one would expect there be differences in the long-run share price performance between offerings used for capital projects and offerings made for cash purposes such as to repay debt. The average buy-and-hold abnormal returns for issues whose proceeds were used for investment or acquisition are compared with the same for the issues whose proceeds were used to repay debt repayments.

H 6.4 *There should be no differences in average buy-and-hold abnormal returns among the issue groups based on stated reason of the issue.*

Acquisition is seen as a quicker and sometimes more efficient way of expanding, especially into new markets and new products, relative to internal expansion because the target firm's expertise is among the factors the acquirer can use to make profits in shorter periods. Acquisitions in general have been shown to suffer long-term post-acquisition returns (Asquith, 1983; Agrawal, Jaffe and Mandelker, 1992; Loderer and Martin, 1992). Bidders' managers may choose to use equity (cash) financing when bidders shares are overvalued (undervalued), because such a choice will reduce the cost of acquisition. The existing evidence shows that the long-run average abnormal returns, against various benchmarks, for the acquirers/bidders who use cash are significantly higher than the long-run average abnormal returns for acquirers/bidders who use equity (Gregory, 1997; Loughran and Vih, 1997; Michailides, 2000).⁶⁹ One reason for this result is that investors regard firms opting for equity financing as those attempting to exploit the overvaluation and revise the price down. In a similar fashion, the sub-sample in this study in which issuers used the proceeds to finance acquisition could be seen as reflecting those firms that chose to raise cash to pay for the full or part consideration of the acquisition rather than using equity.

Loughran and Ritter (1997) find evidence that firms, which rapidly increase either sales or capital expenditures, have lower subsequent stock

⁶⁹ In terms of the market reaction, takeover bids financed by cash are reported to have significant positive (Servaes, 1991, Draper and Paudyal, 1999), or positive but insignificant abnormal return (Travlos, 1987; Eckbo and Langhor, 1989; Frank, Harris and Titman, 1991).

returns than other firms do. They argue that issuers continue to invest heavily even when their performance deteriorate, which may indicate that managers are just as overoptimistic about the issuing firms' future profitability as are investors. Cheng (1995) finds that the long-run underperformance is most severe for equity issuers who do not invest the proceeds for capital investments. The author concludes that firms that do not invest the proceeds may be timing their issues to coincide with the period when the overpricing is most severe.

Information on the reasons of issue is primarily collected from the Datastream, which provided this information from 1986 to 1995. The Extel database was also used to supplement information for issuers whose information was not available on the Datastream. Yet, usage information regarding 209 issues could not be found. Because of the uncertainty about whether the issuers did not disclose this or it was just the case of the data sources missing their entries, such issues were grouped together and their average buy-and-hold abnormal return, are shown separately.

For many issues, more than one reason of issue was recorded. Following classification approaches used in previous studies (Mikkelson and Partch, 1986; and Masulis and Korwar, 1986), the issues are segmented into those mainly intended for internal investments, reducing/repaying debt and financing acquisition.⁷⁰ Moreover, Masulis and Korwar (1986) suggest grouping of related reasons together.⁷¹ For example, issues that were used to fund acquisitions also include the issues in which part of proceeds was used to reduce debt or replenish cash resources used in the recent specific acquisition, and part was used for current or future acquisitions. These also include issues in which part of the proceeds was used to provide working capital required for the enlarged group as

⁷⁰ Mikkelson and Partch (1986) recommend a separate group for the issues made to finance debt because they are not covered in the existing theories (Myers and Majluf, 1984; Millar and Rock, 1985) pertaining to the market reaction to security offerings that provide new financing. Acquisitions are grouped separately because they represent external investment and Suzuki (2000) suggests that the market may perceive them differently because investors are more concerned with the verifiability of the internal project than they are with acquisition projects. Recent research show a separate long-run underperformance in acquisitions (Gregory, 1997; Loughran and Vjih, 1997)

⁷¹ For example, debt reduction involving replacing short-term debt incurred funding recent capital expenditure projects, where these short-term borrowing are likely to be renewed to finance additional capital expenditures, are more appropriately interpreted as indirect forms of capital expenditure financing.

well as to invest in the modernisation of the acquired firm. Two other groups were identified; one for mixed cases and another to include issues where details on the reason of issue were unavailable on either the Datastream or Extel (see, Appendix 2 for classification details).

Table 6.10 presents the mean and median firm size, market-to-book ratio and the relative issue size at the year-end prior to the offering for each usage category. Firms offering equity to finance investment are, on average, significantly bigger than the average firm size at 0.10 level. These are also significantly bigger than either those that issued to fund acquisition or those that issued to repay debt, at 0.05 levels. The issue size relative to the issuers' pre-offering market capitalisation for the investment category is significantly lower than in the rest of the usage categories. However, given the average firm size in this category, the issues would still be bigger in absolute terms. Interestingly, the group of issues with details unavailable on both data sources contains the smallest average firm size compared to the average firm in the sample as well as average firm size in the rest of the groups.

Tables 6.11 to 6.13 present the results for the 1-, 3-, 5-year buy-and-hold returns wealth relatives and fraction of underperformance measured against size-, size and industry-, and size and market-to-book ratio-matched non-issuers, respectively, categorised by the stated reason of issue. Some trends emerged from the results. There is no significant underperformance for issues made to finance debt up to 3 years after the offering. The five-year underperformance for these issues is benchmark related; the underperformance is significantly negative when measured against industry and size and against size and market-to-book value benchmark but not against the size benchmark. The underperformance in issuers using funds for investment recovers in the fifth year. This may reflect some initial realisation of the projects' contribution to cash flows. However, the hypothesis that the underperformance is same between either acquisition or investment and reducing debt, could not be rejected in all three benchmarks. Therefore, while the empirical evidence show that the stated reason of the issue may have an impact on the announcement period returns, it does not appear to influence the long-run returns of UK rights issues.

6.3 Post-offering Performance by Firm Characteristics

This section examines the buy-and-hold abnormal return patterns to determine whether they can be attributable to a particular subset of firms based on firms' characteristics such as firm size, market to book ratios, firm age since IPO and the industry in which the issuer operates. To achieve this, the mean buy-and-hold abnormal returns are segmented into: (i) quintiles based of firm size and quintiles based on market-to-book ratio; (ii) "young" and "mature" issuers; and (iii) industry sectors. The results show that firm size and market-to-book ratios cannot explain the cross-sectional patterns in the buy-and-hold abnormal returns. The underperformance is more severe in "young" issuers, and is significantly more severe over the one-year holding period, than in the "mature" issuers. This seems to suggest a possible continuation of the IPO's underperformance into their post-SEO performance. In addition, there is evidence that in some of the industry sectors, issuers have the worst performance, while in some other sectors, issuers outperform their non-issuing counterparts.

6.3.1 Firms size and market-to-book ratios

In chapter 5, Figure 5.4 shows that the sample of this study is biased towards very small firms. Brav, Geczy and Gompers (2000) argue that such bias could be because smaller firms will be more likely to generate less internal cash and therefore, need to issue new equity to finance their expansion. Moreover, smaller firms are more likely to have low asset levels making borrowing either difficult or limited to small amounts relative to their actual cash needs, forcing them to issue equity. Empirical capital market research has documented a size effect that small firms usually have higher average risk adjusted returns than larger firms do. See for example, Banz (1981) and Reinganum (1981).

High market-to-book ratios in small firms may represent either future growth opportunities for which funding has to be raised, or are just indicators of underpricing (Brav, Geczy and Gompers, 2000). Value (low market-to-book ratio) firms have reliably higher realised returns than do growth (high market-to-book ratios) firms (see for example, Loughran, 1997). Furthermore, most firms conducting SEOs have had a substantial increase in share price during the

prior year (Marsh, 1979; Asquith and Mullins, 1986; Masulis and Korwar, 1986; Levis, 1995; Loughran and Ritter, 1995). As a result, most issuing firms have relatively high pre-issue market-to-book ratios and firms with high market-to-book ratios have low returns in the post-offering period.

Thus, it is conceivable that both the size of the firm, measured by the market value of its equity, and the market-to-book ratios are important factors in the subsequent performance of SEOs. For example, finding a difference in underperformance among the market-to-book ratio groups, especially if underperformance is more severe in the highest market-to-book ratio group may indicate that the underperformance of issuing firms could be a manifestation of the more general tendency for firms with high market-to-book ratios or growth firms to have low post-offering returns. It could also be consistent with the case in which investors with the highest expectations are disappointed most when the issuing firms fails to perform subsequently.

To examine the potential effects of these factors in the sample, the buy-and-hold abnormal returns are disaggregated into quintiles of pre-offering market capitalisation and market-to-book ratios. The following hypotheses are tested:

H6.5 *There is no difference in the average buy-and-hold abnormal returns between the issuers in smallest and issuers in the largest capitalisation quintiles.*

H6.6 *There is no difference in the average buy-and-hold abnormal returns between issuers in the lowest and issuers in the highest market-to-book ratio quintiles.*

Tables 6.14-6.16 present the results. In Panel A of each table, the buy-and-hold abnormal return patterns are categorised into size quintiles using market capitalisation values at the year-end prior to the offering. The first quintile contains the smallest 20% of the sample issues (issuers with market capitalisation of £6.48 million or less) and the fifth contains the largest 20% (issuers with market capitalisation of £138.54 million and above).

The smallest size group has higher buy-and-hold returns for both issuing and matching firms than the largest size group, consistent with the size effect in

cross-sectional stock returns. There is evidence of significant underperformance across all size quintiles against size matched, size and industry matched and size and market-to-book ratio matched nonissuers. There is no clear pattern in the wealth relatives (all less than one) across the size quintiles over all horizons. The null hypothesis of no difference in the mean buy-and-hold abnormal return between the smallest and the largest issuers cannot be rejected at 10% level. It is therefore concluded here that the level of underperformance is not dependent on the size of the issuing firm. Cai (1998) and Cai and Loughran (1998) provide similar results and conclusion for Japanese rights issues and non-rights issues, respectively. Contrasting results are reported for the US issuers in Spiess and Affleck-graves (1995). They find that the smallest firms group (quintile 1) has significantly more negative mean buy-and-hold abnormal returns than the rest of the quintiles using a pair wise multiple comparison.

In Panel B of each table, the buy-and-hold abnormal return patterns are categorised into market-to-book ratio quintiles based on the market-to-book ratios at the end of the calendar year prior to the offering. The lowest market-to-book ratio quintile contains issuers with a market-to-book ratio of 1.03 or less whereas the highest quintile contains issuers with a market-to-book ratio higher than 3.67 times.

All wealth relatives are less than unity, showing that, on average, issuers across the market-to-book ratio quintile groups underperform their non-issuing counterparts. However, the null hypothesis of no difference between the mean buy-and-hold abnormal returns between the lowest and the highest market-to-book ratio quintile groups cannot be rejected at 10% level, except for the five-year window, size and industry adjusted.

Previous studies report contrasting results. Cai (1998) finds significant difference in the three-, and five-year buy-and-hold abnormal returns (at 0.01 level) for the Japanese rights issuers, size and market-to-book ratio adjusted, between issuers in the higher and lower market-to-book ratio quartiles, where the higher market-to-book ratio quartile group show the worst underperformance. Spiess and Affleck-Graves (1995), using a joint F-test show significant differences in the mean performance across book-to-market quintiles for the US issuer over the five-year holding period. A pair-wise multiple

comparison shows that the mean buy-and-hold abnormal return, size and industry adjusted, is significantly more negative at 5% level for firms in the lowest book-to-market quintile compared with firms in book-to-market quintiles 2 and 4.

From these results, it can be concluded that for the UK rights issues studied here, once the size and market-to-book ratios have been controlled for in the measures of expected returns, the two variables have no explanatory power in explaining the observed average buy-and-hold abnormal returns.

6.3.2 Firm age since IPO

There is overwhelming empirical research evidence that IPO firms underperform various benchmarks in the aftermarket period. See, for example, Ritter, (1991), Levis (1993; 1995), Loughran and Ritter (1995), to mention but a few. Loughran and Ritter (1995) and Spiess and Affleck-Graves (1995) argue that if the sample includes firms that went public in the recent past prior to the SEOs, then the observed SEO underperformance may not be independent of the long-run underperformance of the IPO firms.

This section investigates whether the observed underperformance following the UK equity rights issues may be a continuation of the aftermarket underperformance following recent IPOs in the sample. In chapter 5, Table 5.1 shows that 198 issues were made by firms that went public within the five-year period prior to the SEO, out of which 105 had gone public within three years. These are referred to here as “young” issuers whereas the rest are referred to as “mature” issuers.

H6.7 There is no difference in underperformance between “young” issuers and “mature” issuers.

The hypothesis assumes that the IPO firm’s re-issuing decision is unaffected by the aftermarket underperformance so that, with an independent SEO underperformance, these issuers will show poorer average buy-and-hold abnormal returns, because of the joint effects. However, it is expected that the effect would be more pronounced in the initial years of the post-SEO period. Alternatively, Levis (1995) and others show that re-issuing IPOs are those IPO

firms that realised higher performance following the IPO.⁷² Likewise, the high stock performance in the after market period may simply imply that the market is still optimistic about the firm's growth potential and post-SEO information confirms otherwise and the share price falls. In this case, the post-SEO average buy-and-hold abnormal return patterns for the mature issuers are expected to be indistinguishable from those of young issuers.

Table 6.17 to 6.19 present post-offering average buy-and-hold abnormal return patterns, wealth relatives, and the fraction of underperformance, against size matched (Table 6.17), size and industry matched (Table 6.18), and size and market-to-book ratio matched (Table 6.19) nonissuers, respectively. The tables compare the average buy-and-hold abnormal returns between "young" issuers (≤ 3 years or ≤ 5 years) and "mature" issuers (> 3 years or > 5 years). In each of the definitions, both "young" and "mature" issuers significantly underperformed their matched counterparts, over all horizons. All the wealth relatives for the "young" issuers are lower than the wealth relatives for the "mature" issuers. Consistent with the previous evidence by Spiess and Afleck-Graves (1995) for US firms against size and industry nonissuers and Cai and Loughran (1998) for Japanese firms against size-matched nonissuers, these results indicate an evidence of slightly more severe underperformance for the "young" SEO firms than it is for the "mature" SEO firms.

The mean buy-and-hold abnormal return over the one-year horizon is significantly more negative for the "young" issuers (< 5 years) than for "mature" firms. This result could imply an existence of some influence of the ongoing IPO underperformance in the first year, which on average would be expected to affect the earlier, rather than the later, years of post-SEO period. In summary therefore, the post-SEO results reported in the previous chapter cannot wholly be attributed to ongoing underperformance of IPOs. That is, there is an independent post-SEO underperformance.

Loughran and Ritter (1995) find contrasting results for US firms that mature issuers (> 5 years) underperform size matched nonissuers by slightly

⁷² One explanation is that firms may use the IPO to signal their value to the market by issuing just a part of their required equity capital and re-issue immediately thereafter, having enjoyed good after market stock performance, to enjoy even further favourable re-issuing terms. This is referred to as the "feedback hypothesis in Levis (1995).

more than young firms: the five-year wealth relative for “mature” issuers is 0.68, slightly less than the five-year wealth relative of 0.72 for the “young” issuers. The authors conclude that the poor long-run performance of SEO firms is not merely another manifestation of the low returns on IPOs.

The results of this section add to the earlier finding on UK rights issues reported in Levis (1995) based on re-issuing IPOs,⁷³ suggesting a relationship between post-IPO and post-SEO performance. That is, the re-issuing firms are normally the post-IPO good performers (Levis, 1995; Wolfgang and Thies, 2002),⁷⁴ whereas the average or the poor performers may opt out. The sample permitting, it would be interesting to investigate the differences in performance of the reissuing IPOs firms between aftermarket performers and non-performers. This is, however, beyond the scope of this project.

6.3.3 Industry Sectors

Table 6.20 and Table 6.22 examine the post-offering performance of SEO firms in different industry sectors as outlined in Appendix 5.1 (see Chapter 5). A sector is grouped alone if it has at least 25 observations.⁷⁵ Finding variability in underperformance across industries indicates that the long-run performance of issuing firms is pervasive across most industry sectors, and is not, the result of severe underperformance in a few specific industries. In addition, an underperformance of SEOs in so many industries relative to other firms in the same industry may be interpreted as evidence more consistent with the ‘fads’ explanation rather than mere bad luck.

⁷³ Levis (1995) finds that UK IPOs that subsequently made rights issues within the first five years of IPO had gradual and consistent declining CAARs starting almost immediately after the announcement of the SEO reaching the level of -18.49%, -11.21%, and -15.1% against the FTA, HGSC and size decile benchmarks respectively, by the 18th month following the SEO. Using a wider sample of SEOs and alternative benchmarks, this study confirms Levis’ findings that there is a part influence of IPO underperformance over the post-SEO performance.

⁷⁴ Wolfgang and Thies (2002), for example, find that on average, firms that have seasoned equity offerings in German within the first five years of IPO had positive raw returns as well as positive market adjusted returns after the IPO, whereas the IPOs that do not re-issue had clear negative long-run abnormal stock returns following the IPO.

⁷⁵ See for example the 25-observation rule in Spiess and Affleck-Graves (1995) for SEOs and Ritter (1991) for IPOs. Also, see the 15-observation rule in Levis (1993) for UK IPOs.

Results show evidence of severe underperformance in the engineering, foods & breweries and pharmaceuticals in almost all performance horizons, regardless of the benchmark used. Paper & printing and media sectors severely underperformed against comparably sized firms in their own sectors, whereas the textiles and distributors severely underperform against comparably sized nonissuing firms with approximately similar market-to-book ratio. There are strong sectors too. Excluding the "Others" groups, five-year abnormal returns are positive in between 1 and 4 out of 15 sectors depending on the benchmark used. The mining and electronic & electrical sectors consistently have wealth relatives higher than one over the 1-, 3- and 5-year horizon in size and size and industry benchmarks. Over five-year holding period, the financial sector record consistent wealth relative higher than one regardless of the benchmark used. The property sector records a wealth relative higher than one over the one-year holding period relative to the size and industry matched nonissuers, and over the three-year holding period relative to the size and market-to-book ratio matched nonissuers. In summary therefore, the results show marked differences in the post-offering performance of SEO firms across industries.

6.4 Summary and Conclusions

The objective of this chapter was to investigate further the long-run underperformance following UK rights issues for the period 1986 to 1995. Of particular interest was to analyse the buy-and-hold abnormal return patterns, reported in chapter 5, in detail. Because the evidence in chapter five is based on averages it is rational to expect that some issues might have had positive while other might have negative abnormal returns. This analysis was therefore aimed at increasing our understanding of the factors that might explain the existence of such patterns.

The analysis followed a partitioning approach by disaggregating the buy-and-hold abnormal returns either into quintile groups or into other specified groups, as appropriate, and compare the average abnormal returns between groups of interest according to the stated hypothesis. In doing so, the chapter explores both issue characteristics (issue size, issue frequency, and issue

purpose, year of offering) and firm characteristics (firm size, market-to-book ratios, firm age since IPO, industry sector).

The empirical findings can be summarised as follows: After controlling for firm size and market-to-book ratio in the formation of the benchmarks of expected returns, underperformance is spread across the firm size quintiles as well as across the market-to-book ratio quintiles. Also based on issue size quintiles, in absolute 1995 pounds or relative to the pre-offering market capitalisation, there is no evidence to suggest that the average buy-and-hold abnormal returns differ across the issue size quintiles. There is no evidence to suggest that the use of proceed information influence the long-run stock performance of the issuers either. However, the analysis returned some significant results too. The underperformance is spread in most of the offering years, but it seems to disappear in the later years of the sample period (1994 and 1995), and it is slightly more severe in firms issuing during the period of high issuing activities than in firms issuing during period of low issuing activities. It is also significantly more severe in firms who issued more frequently (rights issue or other wise) during the five-year period prior to the rights issue under consideration (but did not issue in the five year post-offering period) than in firms who had only one rights issue over the (- 5, + 5) year period. There are significant variations in the underperformance across the industry sectors, where the engineering sector show consistently significant underperformance and mining and electronic & electricals sectors do not show underperformance. In fact, the latter two sectors record wealth relative higher than unity in almost all horizons relative to size and size and industry matched nonissuers.

The year of offering evidence, which suggest that, the observed underperformance seem to disappear in the later years could indicate consistency with time trends in other anomalies. See, for example, Schwert (2002), who analysed some of the previously reported anomalies and find out the size and value effects reported in the eighties for instance have disappeared in the recent years. Although, the disappearance did not happen with other anomalies analysed, there were significant decreases in the magnitude of, for example, the January effect in the recent years. These together seem to suggest

the need to perform more tests using more recent year rights issues. The results in a contemporaneous study by Abhyankar and Ho (2001) which applied portfolio approach and multifactor model having included more recent years have shown disappearance of abnormal returns. Is this a function of better model or effect of including more years in which abnormal returns were significantly positive? One possible explanation for the disappearance is that over time investors might have arbitrated the anomaly away. It could also mean that sophistication in analytical skills and tools leads to improved results. The evidence based on the pre-issue frequency may suggest that investors are concerned with the frequency at which management go back to shareholders for more money. Do firms direct funds to the proposed projects? It would be interesting to, data permitting, investigate whether this happens. It could be that investors are more disappointed by these firms over time when their expectations given the reason for frequent issue are not met.

Table 6.1 Long-run stock return categorised by year of offering and issue-volume period (Size)

This table presents distribution of mean buy-and-hold returns, wealth relatives and the fraction of underperformance categorised by year of offering and issue volume periods. Matched firms are chosen based on size (market capitalisation at the year-end prior to the offering year). High-volume period issues are those issues that occurred during the year in which the total number of issues is at least the median number of the issues per year for the entire period 1986-1995 (1986-1988, 1991, and 1993), otherwise they are low volume period issues. The "****", "**", and "*", indicate significance at 0.01, 0.05, and 0.10 levels, respectively, based on paired and two sample parametric test as appropriate. The fraction of underperformance is tested against 50% based on the z-test for population proportion.

Year	Sample size	1-Year						3-Year						5-Year									
		Issuers	Non-issuers	ABHARs	Wealth relative	Fraction underperform	Issuers	Non-issuers	ABHARs	Wealth relative	Fraction underperform	Issuers	Non-issuers	ABHARs	Wealth relative	Fraction underperform	Issuers	Non-issuers	ABHARs	Wealth relative	Fraction underperform		
1986	95	55.60	55.54	0.06	1.00	51.58	60.91	94.44	-33.53 **	0.83	66.32 ***	36.62	77.26	-40.64 ***	0.77	66.32 ***							
1987	92	-9.72	4.32	-14.04 ***	0.87	59.78 *	-21.02	7.29	-28.31 ***	0.74	65.22 ***	-22.43	5.47	-27.90 ***	0.74	64.13 ***							
1988	88	6.41	17.73	-11.32 **	0.90	63.64 **	-27.59	1.04	-28.63 ***	0.72	72.73 ***	-26.65	26.48	-53.13 ***	0.58	76.14 ***							
1989	69	-18.37	-14.47	-3.90	0.95	56.52	-23.45	-5.55	-17.90 *	0.81	63.77 **	0.68	54.58	-53.90 **	0.65	59.42							
1990	53	-8.69	3.46	-12.16 **	0.88	60.38	-6.50	29.93	-36.44 ***	0.72	67.92 ***	4.62	68.47	-63.85 **	0.62	66.04 **							
1991	114	-3.85	11.64	-15.48 ***	0.86	64.04 ***	39.12	76.94	-37.83 **	0.79	68.42 ***	80.11	117.41	-37.30	0.83	67.54 ***							
1992	58	19.57	39.92	-20.35 **	0.85	56.90	28.83	80.10	-51.27 *	0.72	63.79 **	46.00	131.44	-85.44 *	0.63	74.14 ***							
1993	104	6.63	22.60	-15.98 ***	0.87	54.81	21.18	64.20	-43.02 ***	0.74	65.38 ***	78.33	107.36	-29.03	0.86	60.58 **							
1994	85	1.92	-2.42	4.34	1.04	45.88	57.02	22.73	34.29 *	1.28	41.18	71.76	23.48	48.27 **	1.39	45.88							
1995	60	23.02	17.71	5.30	1.05	46.67	58.60	60.88	-2.28	0.99	58.33	92.81	91.65	1.16	1.01	55.00							
HIGH	493	10.55	22.13	-11.58 ***	0.91	58.82 ***	16.40	51.08	-34.68 ***	0.77	67.55 ***	33.16	70.43	-37.27 ***	0.78	66.73 ***							
LOW	325	2.93	7.25	-4.33	0.96	52.62	24.84	35.18	-10.34	0.92	57.54 ***	45.01	69.27	-24.26 *	0.86	58.77 ***							
t-diff				-1.77 *					-2.29 **					-0.72									

Table 6.2 Long-run stock return categorised by year of offering and issue-volume period (Size and Industry)

This table presents distribution of mean buy-and-hold returns, wealth relatives and the fraction of underperformance categorised by year of offering and issue volume periods. Matched firms are chosen based on pre-offering size and industry. High-volume period issues are those issues that occurred during the year in which the total number of issues is at least the median number of the issues per year for the entire period 1986-1995 (1986-1988, 1991, and 1993), otherwise they are low volume period issues. The "****", "***", "**", and "*" indicate significance at 0.01, 0.05, and 0.10 levels, respectively, based on paired and two sample parametric test as appropriate. The fraction of underperformance is tested against 50% based on the z-test for population proportion.

Year	Sample size	1-Year				3-Year				5-Year						
		Issuers	Non-issuers	ABHARs	Wealth relative	Fraction underperform	Issuers	Non-issuers	ABHARs	Wealth relative	Fraction underperform	Issuers	Non-issuers	ABHARs	Wealth relative	Fraction underperform
1986	95	55.60	52.87	2.73	1.02	54.74	60.91	91.90	-30.98 ***	0.84	72.63 ***	36.62	72.25	-35.63 ***	0.79	63.16 **
1987	92	-9.72	6.71	-16.43 ***	0.85	61.96 **	-21.02	13.63	-34.65 ***	0.70	68.48 ***	-22.43	23.32	-45.75 ***	0.63	70.65 ***
1988	88	6.41	12.65	-6.24	0.94	53.41	-27.59	8.68	-36.27 ***	0.67	67.05 ***	-26.65	43.95	-70.60 ***	0.51	69.32 ***
1989	69	-18.37	-9.43	-8.94 *	0.90	60.87 *	-23.45	8.64	-32.09 ***	0.70	66.67 ***	0.68	74.93	-74.25 ***	0.58	60.87 *
1990	53	-8.69	-3.81	-4.88	0.95	52.83	-6.50	32.32	-38.82 ***	0.71	75.47 ***	4.62	55.27	-50.65 **	0.67	71.70 ***
1991	114	-3.85	5.10	-8.95 *	0.91	56.14	39.12	80.15	-41.03 ***	0.77	61.40 **	80.11	136.92	-56.81 **	0.76	59.65 **
1992	58	19.57	31.42	-11.85	0.91	60.34	28.83	47.71	-18.87	0.87	65.52 **	46.00	80.51	-34.51	0.81	72.41 ***
1993	104	6.63	19.45	-12.82 ***	0.89	59.62 **	21.18	50.61	-29.43 ***	0.80	60.58 **	78.33	77.09	1.23	1.01	56.73
1994	85	1.92	6.79	-4.87	0.95	54.12	57.02	45.85	11.17	1.08	49.41	71.76	74.39	-2.63	0.98	51.76
1995	60	23.02	18.07	4.95	1.04	50.00	58.60	76.79	-18.18	0.90	55.00	92.81	138.65	-45.84	0.81	51.67
HIGH	493	10.55	18.98	-8.43 ***	0.93	57.20 ***	16.40	51.01	-34.61 ***	0.77	65.72 ***	33.16	74.04	-40.88 ***	0.77	63.49 ***
LOW	325	2.93	8.10	-5.17	0.95	55.69 **	24.84	41.78	-16.95 **	0.88	61.23 ***	45.01	84.34	-39.33 ***	0.79	60.62 ***
t-diff				-0.81					-1.87 *					-0.10		

Table 6.4 Long-run stock returns, categorised by issue size

This table summarises the mean stock returns of post-issue 1-, 3-, and 5-year buy-and-hold strategies for UK firms conducting rights issues during 1986-1995, categorised by issue size quintiles. Buy-and-hold returns are measured from the end of the issuing month. Non-issuing firms are chosen based on size, defined as market capitalisation at the year-end prior to the offering. The abnormal return are calculated using equation 4.6, and the t-statistics by equation 4.22. Wealth relatives are defined as the ratio of one plus the mean buy-and-hold return on the issuing firms to one plus the mean buy-and-hold return on the matching non-issuing firms. The fraction of underperformance is the fraction of the quintile sample of issuing firms whose buy-and-hold returns are less than their matching firms' buy-and-hold returns. The test statistics for the fraction of underperformance are based on z-test for populations in equation 4.23. The "****", "***", and "**" indicate significant difference in buy-and-hold abnormal return from zero while for the fraction underperform it indicate that the fraction is significantly different from

	1-Year					3-Year					5-Year					
	Sample size	Issuers	Non-issuers	ABHARs	Wealth relative	Fraction underperform	Issuers	Non-issuers	ABHARs	Wealth relative	Fraction underperform	Issuers	Non-issuers	ABHARs	Wealth relative	Fraction underperform
Panel A: Issue size (constant 1995) ^a																
Smallest	164	16.54	23.75	-7.21	0.94	54.27	36.88	63.50	-26.62	0.84	68.29 ***	84.08	104.38	-20.30	0.90	64.02 ***
2	163	0.24	13.59	-13.35 ***	0.88	57.06 *	14.94	39.09	-24.15 **	0.83	63.19 ***	23.66	65.95	-42.28 **	0.75	64.42 ***
3	164	11.67	20.30	-8.63 *	0.93	58.54 **	13.70	49.36	-35.66 ***	0.76	62.80 ***	26.13	69.76	-43.63 ***	0.74	63.41 ***
4	163	3.79	14.40	-10.61 ***	0.91	60.12 ***	12.88	35.62	-22.74 ***	0.83	65.03 ***	24.43	56.05	-31.62 ***	0.80	64.42 ***
Largest	164	5.30	9.04	-3.74	0.97	51.83	20.30	36.17	-15.87 ***	0.88	58.54 **	30.87	53.61	-22.74 ***	0.85	61.59 ***
				-0.52					0.77					0.07		
Panel B: Relative issue size ^b																
Smallest	164	13.42	16.07	-2.65	0.98	51.22	27.54	41.86	-14.32	0.90	65.24 ***	48.76	50.90	-2.15	0.99	54.27
2	163	6.55	15.96	-9.41 **	0.92	54.60	21.40	47.50	-26.10 ***	0.82	59.51 **	41.39	77.37	-35.99 ***	0.80	62.58 ***
3	164	2.89	12.44	-9.55 **	0.92	57.93 **	15.62	44.46	-28.85 **	0.80	62.80 ***	31.21	75.65	-44.44 **	0.75	65.24 ***
4	163	10.49	25.20	-14.71 ***	0.88	60.12 ***	13.96	60.32	-46.36 ***	0.71	66.87 ***	18.55	92.64	-74.09 ***	0.62	72.39 ***
Largest	164	4.27	11.49	-7.22	0.94	57.93 **	20.22	29.78	-9.56	0.93	63.41 ***	49.35	53.48	-4.13	0.97	63.41 ***
				0.71					-0.32					0.07		

^a issue proceeds adjusted by the UK Retail Price index. The breakpoints are £3.79, £10.04, £20.06, and £45.65 millions, respectively, for the issue size quintiles. For example, the first quintile includes issuers making issues worth £3.78 million or less, and so on.

^b Issue proceeds scaled by the year-end market capitalisation prior to the offering. The break points are 0.20, 0.27, 0.39, and 0.62, respectively, for the relative issue size quintiles.

Table 6.5 Long-run stock returns, categorised by issue size (Size and industry)

This table summarises the mean stock returns of post-issue 1-, 3-, and 5-year buy-and-hold strategies for UK firms conducting rights issues during 1986-1995, categorised by issue size quintiles. Buy-and-hold returns are measured from the end of the issuing month. Non-issuing firms are chosen based on size and industry. The abnormal return are calculated using equation 4.6, and the t-statistics by equation 4.22. Wealth relatives are defined as the ratio of one plus the mean buy-and-hold return on the issuing firms to one plus the mean buy-and-hold return on the matching non-issuing firms. The fraction of underperformance is the fraction of the quintile sample of issuing firms whose buy-and-hold returns are less than their matching firms' buy-and-hold returns. The test statistics for the fraction of underperformance are based on z-test for populations in equation 4.23. The "****", "***", and "**" indicate significant difference in buy-and-hold abnormal return from zero while for the fraction underperform it indicate that the fraction is significantly different from 50% at 0.01, 0.05 and 0.10 levels, respectively

	1-Year					3-Year					5-Year					
	Sample size	Issuers	Non-issuers	ABHARs	Wealth relative	Fraction underperform	Issuers	Non-issuers	ABHARs	Wealth relative	Fraction underperform	Issuers	Non-issuers	ABHARs	Wealth relative	Fraction underperform
Panel A: Issue size (constant 1995) ^a																
Smallest	164	16.54	16.73	-0.19	1.00	56.71 *	36.88	63.92	-27.04 *	0.84	62.80 ***	84.08	107.70	-23.61	0.89	63.41 ***
2	163	0.24	15.60	-15.35 ***	0.87	58.90 **	14.94	44.13	-29.19 ***	0.80	65.03 ***	23.66	70.57	-46.91 ***	0.72	61.96 ***
3	164	11.67	17.04	-5.37	0.95	48.78	13.70	50.82	-37.12 ***	0.75	64.63 ***	26.13	86.37	-60.24 ***	0.68	62.80 ***
4	163	3.79	12.03	-8.24 **	0.93	59.51 **	12.88	41.20	-28.32 ***	0.80	64.42 ***	24.43	59.49	-35.06 ***	0.78	63.80 ***
Largest	164	5.30	11.88	-6.57 **	0.94	59.15 **	20.30	36.59	-16.29 ***	0.88	62.80 ***	30.87	66.40	-35.53 ***	0.79	59.76 **
				1.03					-0.67							0.38
Panel B: Relative issue size ^b																
Smallest	164	13.42	17.47	-4.04	0.97	54.88	27.54	57.13	-29.59 ***	0.81	64.02 ***	48.76	86.76	-38.00 **	0.80	60.37 ***
2	163	6.55	13.90	-7.35 **	0.94	50.92	21.40	47.22	-25.81 ***	0.82	67.48 ***	41.39	92.58	-51.19 ***	0.73	64.42 ***
3	164	2.89	13.14	-10.25 ***	0.91	63.41 ***	15.62	38.71	-23.09 **	0.83	62.20 ***	31.21	65.66	-34.46 **	0.79	59.76 **
4	163	10.49	11.43	-0.94	0.99	51.53	13.96	34.32	-20.36 **	0.85	61.35 ***	18.55	44.84	-26.30 *	0.82	62.58 ***
Largest	164	4.27	17.32	-13.05 **	0.89	62.20 ***	20.22	59.27	-39.04 ***	0.75	64.63 ***	49.35	100.71	-51.37 *	0.74	64.63 ***
				1.32					0.60							0.42

^a issue proceeds adjusted by the UK Retail Price index. The breakpoints are £3.79, £10.04, £20.06, and £45.65 millions, respectively, for the issue size quintiles. For example, the first quintile includes issuers making issues worth £3.78 million or less, and so on.

^b Issue proceeds scaled by the year-end market capitalisation prior to the offering. The break points are 0.20, 0.27, 0.39, and 0.62, respectively, for the relative issue size quintiles.

Table 6.6 Long-run stock returns, categorised by issue size (Size and market-to-book ratio)

This table summarises the mean stock returns of post-issue 1-, 3-, and 5-year buy-and-hold strategies for UK firms conducting rights issues during 1986-1995, categorised by issue size quintiles. Buy-and-hold returns are measured from the end of the issuing month. Non-issuing firms are chosen based on size and market-to-book ratio. The abnormal return are calculated using equation 4.6, and the t-statistics by equation 4.22. Wealth relatives are defined as the ratio of one plus the mean buy-and-hold return on the issuing firms to one plus the mean buy-and-hold return on the matching non-issuing firms. The fraction of underperformance is the fraction of the quintile sample of issuing firms whose buy-and-hold returns are less than their matching firms' buy-and-hold returns. The test statistics for the fraction of underperformance are based on z-test for populations in equation 4.23. The "****", "***", and "**" indicate significant difference in buy-and-hold abnormal return from zero while for the fraction underperform it indicate that the fraction is significantly different from 50% at 0.01, 0.05 and 0.10 levels,

	1-Year					3-Year					5-Year					
	Sample size	Issuers	Non-issuers	ABHARs	Wealth relative	Fraction underperform	Issuers	Non-issuers	ABHARs	Wealth relative	Fraction underperform	Issuers	Non-issuers	ABHARs	Wealth relative	Fraction underperform
Panel A: Issue size (constant 1995) ^a																
Smallest	164	16.54	21.32	-4.78	0.96	59.76 **	36.88	52.20	-15.31	0.90	61.59 ***	84.08	96.07	-11.99	0.94	63.41 ***
2	163	0.24	20.50	-20.26 ***	0.83	64.42 ***	14.94	57.69	-42.75 ***	0.73	68.71 ***	23.66	94.92	-71.26 ***	0.63	70.55 ***
3	164	11.67	23.49	-11.82 ***	0.90	57.32 *	13.70	56.06	-42.36 ***	0.73	64.02 ***	26.13	82.76	-56.63 ***	0.69	62.80 ***
4	163	3.79	10.91	-7.12 **	0.94	53.99	12.88	29.97	-17.10 **	0.87	61.35 ***	24.43	56.30	-31.86 ***	0.80	61.35 ***
Largest	164	5.30	14.57	-9.27 ***	0.92	61.59 ***	20.30	38.26	-17.96 ***	0.87	59.76 **	30.87	68.23	-37.36 ***	0.78	59.76 **
				0.65					0.16					0.77		
Panel B: Relative issue size ^b																
Smallest	164	13.42	25.48	-12.06 **	0.90	59.15 **	27.54	57.19	-29.65 **	0.81	62.80 ***	48.76	92.89	-44.14 ***	0.77	59.76 **
2	163	6.55	17.17	-10.62 ***	0.91	59.51 **	21.40	44.36	-22.95 ***	0.84	60.12 ***	41.39	77.67	-36.28 ***	0.80	60.74 ***
3	164	2.89	14.24	-11.35 ***	0.90	60.98 ***	15.62	47.16	-31.54 ***	0.79	65.24 ***	31.21	78.87	-47.66 ***	0.73	65.24 ***
4	163	10.49	17.08	-6.59	0.94	55.83	13.96	41.06	-27.10 ***	0.81	62.58 ***	18.55	67.21	-48.66 ***	0.71	63.19 ***
Largest	164	4.27	16.83	-12.55 **	0.89	61.59 ***	20.22	44.39	-24.17 *	0.83	64.63 ***	49.35	81.61	-32.26	0.82	68.90 ***
				0.07					-0.31					-0.38		

^a issue proceeds adjusted by the UK Retail Price index. The breakpoints are £3.79, £10.04, £20.06, and £45.65 millions, respectively, for the issue size quintiles. For example, the first quintile includes issuers making issues worth £3.78 million or less, and so on.

^b Issue proceeds scaled by the year-end market capitalisation prior to the offering. The break points are 0.20, 0.27, 0.39, and 0.62, respectively, for the relative issue size quintiles.

Table 6.7 Long-run stock returns categorised by issue frequency (Size)

This table presents the buy-and-hold returns, wealth relatives and fraction of underperformance for the 1-, 3-, and 5-year buy-and-hold strategies between frequent issuers and control group of one time-only issuers. In Panel A, issue frequency is based on rights offerings during the 1986-1995 period, where the control group contains firms making rights issue only once over the whole sample period. In Panel B and Panel C, the issue frequency is based on all equity offerings during the -5 to +5-year period relative to the rights offering under consideration, where, the control group contains firms with neither pre- or post-offering equity offering (rights issues or other wise), whereas the rest of the groups contain firms with no post-offering equity issues (Panel B) or pre-offering equity issues (Panel C). The matching firms are picked by size and the buy-and-hold abnormal returns are calculated based on equation 4.6. the "****", "***", and "**" indicate that the mean BHAR (fraction underperform) is significantly different from zero (50%) at 0.01, 0.05 and 0.10 levels, respectively.

Sample size	1-Year				3-Year				5-Year							
	Issuers	Non-issuers	ABHARs	Wealth relative	Fraction underperform	Issuers	Non-issuers	ABHARs	Wealth relative	Fraction underperform	Issuers	Non-issuers	ABHARs	Wealth relative	Fraction underperform	
Panel A: Frequency of rights issues																
Control	410	5.22	16.59	-11.37 ***	0.90	58.5 ***	18.53	44.46	-25.93 ***	0.82	63.9 ***	49.12	68.82	-19.71	0.88	61.2 ***
2	274	7.99	16.13	-8.13 **	0.93	55.8 *	16.88	42.71	-25.84 ***	0.82	65.3 ***	23.86	67.45	-43.59 ***	0.74	69.0 ***
				(-0.74)					(-0.01)					(1.27)		
≥3	134	13.61	15.28	-1.68	0.99	50.7	29.39	49.88	-20.49	0.86	59.0 **	32.10	78.65	-46.55 **	0.74	59.7 **
				(-1.78)					(-0.38)					(1.14)		
Panel B: Frequency of SEOs prior to the rights issue																
Control	149	10.71	17.01	-6.30	0.95	60.4 **	21.41	45.90	-24.48 ***	0.83	61.1 ***	38.12	78.10	-40.00 **	0.78	56.4
1	167	1.64	15.96	-14.32 ***	0.88	56.3	14.51	39.12	-24.60 **	0.82	63.5 ***	34.50	55.40	-20.80	0.87	61.7 ***
				(1.38)					(0.01)					(-0.85)		
2	72	-4.31	15.02	-19.33 ***	0.83	72.2 ***	-10.84	37.58	-48.42 ***	0.65	70.8 ***	-8.38	52.10	-60.50 ***	0.60	72.2 ***
				(1.93)					(1.85)					(0.95)		
≥2	104	-6.18	16.75	-22.93 ***	0.80	70.2 ***	-15.15	46.50	-61.70 ***	0.58	71.2 ***	-3.57	59.20	-62.80 ***	0.61	72.1 ***
				(2.64)					(2.28)					(0.98)		
Panel C: Frequency of SEOs after the rights issue																
Control	149	10.71	17.01	-6.30	0.95	60.4 **	21.41	45.90	-24.48 ***	0.83	61.1 ***	38.12	78.10	-40.00 **	0.78	56.4
1	73	15.59	18.11	-2.52	0.98	50.7	27.92	48.84	-20.90 *	0.86	64.4 **	63.00	74.20	-11.20	0.94	64.4 **
				(-0.52)					(-0.24)					(-1.08)		
≥2	41	30.36	30.00	0.36	1.00	41.5	62.90	54.80	8.10	1.05	65.9 **	147.60	91.90	55.70	1.29	48.8
				(-0.65)					(-1.86)					(-1.00)		

Table 6.8 Long-run stock returns categorised by issue frequency (Size and industry)

This table presents the buy-and-hold returns, wealth relatives and fraction of underperformance for the 1-, 3-, and 5-year buy-and-hold strategies between frequent issuers and control group of one time-only issuers. In Panel A, issue frequency is based on rights offerings during the 1986-1995 period, where the control group contains firms making rights issue only once over the whole sample period. In Panel B and Panel C, the issue frequency is based on all equity offerings during the -5 to +5-year period relative to the rights offering under consideration, where, the control group contains firms with neither pre- or post-offering equity offering (rights issues or other wise), whereas the rest of the groups contain firms with no post-offering equity issues (Panel B) or pre-offering equity issues (Panel C). The matching firms are picked by size and industry, and the buy-and-hold abnormal returns are calculated based on equation 4.6. the "***", "**", and "*" indicate that the mean BHAR (fraction underperform) is significantly different from zero (50%) at 0.01, 0.05 and 0.10 levels, respectively.

Sample size	1-Year				3-Year				5-Year							
	Issuers	Non-issuers	ABHARs	Wealth relative	Fraction underperform	Issuers	Non-issuers	ABHARs	Wealth relative	Fraction underperform	Issuers	Non-issuers	ABHARs	Wealth relative	Fraction underperform	
Panel A: Frequency of rights issues																
Control	410	5.22	15.84	-10.62 ***	0.91	59.0 ***	18.53	47.82	-29.29 ***	0.80	64.4 ***	49.12	83.55	-34.43 ***	0.81	62.2 ***
2	274	7.99	13.23	-5.24 *	0.95	55.8 *	16.88	43.12	-26.25 ***	0.82	63.9 ***	23.86	64.67	-40.81 ***	0.75	61.7 ***
≥3	134	13.61	13.95	(-1.26)	1.00	50.7	29.39	54.53	(-0.32)	0.84	62.7 ***	32.10	89.11	(0.38)	0.70	64.2 ***
				(-1.99)					(-0.33)					(0.96)		
Panel B: Frequency of SEOs prior to the rights issue																
Control	149	10.71	14.46	-3.75	0.97	57.0 *	21.41	31.11	-9.69	0.93	55.0	38.12	54.65	-16.50	0.89	53.7
1	167	1.64	16.28	-14.64 ***	0.87	58.1 **	14.51	46.98	-32.47 ***	0.78	64.7 ***	34.50	74.50	-39.90 **	0.77	63.5 ***
2	72	-4.31	8.85	-13.16 **	0.88	62.5 **	-10.84	45.81	(1.94)	0.61	77.8 ***	-8.38	76.90	(1.16)	0.52	73.6 ***
≥2	104	-6.18	9.34	(1.36)	0.86	61.5 **	-15.15	42.50	(3.73)	0.60	76.0 ***	-3.57	80.20	(2.86)	0.54	73.1 ***
				(1.8)					(4.26)					(2.91)		
Panel C: Frequency of SEOs after the rights issue																
Control	149	10.71	14.46	-3.75	0.97	57.0 *	21.41	31.11	-9.69	0.93	55.0	38.12	54.65	-16.50	0.89	53.7
1	73	15.59	22.48	-6.90	0.94	53.4	27.92	55.80	-27.90 **	0.82	63.0 **	63.00	77.60	-14.60	0.92	65.8 ***
≥2	41	30.36	14.87	(0.38)	1.13	36.6 *	62.90	62.80	(1.15)	1.00	53.7	147.60	66.30	(-0.09)	1.49	46.3
				(-2.29)					(-0.47)					(-1.17)		

Table 6.9 Long-run stock returns categorised by issue frequency (Size and market-to-book ratio)

This table presents the buy-and-hold returns, wealth relatives and fraction of underperformance for the 1-, 3-, and 5-year buy-and-hold strategies between frequent issuers and control group of one time-only issuers. In Panel A, issue frequency is based on rights offerings during the 1986-1995 period, where the control group contains firms making rights issue only once over the whole sample period. In Panel B and Panel C, the issue frequency is based on all equity offerings during the -5 to +5-year period relative to the rights offering under consideration, where, the control group contains firms with neither pre- or post-offering equity offering (rights issues or other wise), whereas the rest of the groups contain firms with no post-offering equity issues (Panel B) or pre-offering equity issues (Panel C). The matching firms are picked by size and market-to-book ratio, and the buy-and-hold abnormal returns are calculated based on equation 4.6. the "****", "***", and "**" indicate that the mean BHAR (fraction underperform) is significantly different from zero (50%) at 0.01, 0.05 and 0.10 levels, respectively.

Sample size	1-Year						3-Year						5-Year							
	Issuers	Non-issuers	ABHARs	Wealth relative	Fraction underperform	Issuers	Non-issuers	ABHARs	Wealth relative	Fraction underperform	Issuers	Non-issuers	ABHARs	Wealth relative	Fraction underperform	Issuers	Non-issuers	ABHARs	Wealth relative	Fraction underperform
Panel A: Frequency of rights issues																				
Control	410	5.22	17.62	-12.41 ***	0.89	62.7 ***	18.53	45.29	-26.76 ***	0.82	64.9 ***	49.12	76.23	-27.12 **	0.85	61.7 ***				
2	274	7.99	18.66	-10.67 ***	0.91	57.7 **	16.88	46.88	-30.00 ***	0.80	61.7 ***	23.86	78.99	-55.13 ***	0.69	68.2 ***				
				(-0.36)					(0.31)					(1.63)						
≥3	134	13.61	18.79	-5.19	0.96	53.0	29.39	51.53	-22.13 *	0.85	60.4 **	32.10	91.56	-59.46 ***	0.69	59.7 **				
				(-1.34)					(-0.35)					(1.62)						
Panel B: Frequency of SEOs prior to the rights issue																				
Control	149	10.71	19.47	-8.75 **	0.93	63.8 ***	21.41	36.08	-14.66 **	0.89	64.4 ***	38.12	64.10	-25.90 **	0.84	59.7 **				
1	167	1.64	17.67	-16.03 ***	0.86	61.7 ***	14.51	46.13	-31.60 ***	0.78	64.1 ***	34.50	74.70	-40.20 ***	0.77	65.9 ***				
				(1.17)					(1.31)					(0.74)						
2	72	-4.31	17.30	-21.60 ***	0.82	65.3 ***	-10.84	52.70	-63.50 ***	0.58	75.0 ***	-8.38	82.60	-90.90 ***	0.50	76.4 ***				
				(1.61)					(3.17)					(3.44)						
≥2	104	-6.18	15.77	-21.95 ***	0.81	64.4 ***	-15.15	45.97	-61.10 ***	0.58	73.1 ***	-3.57	70.50	-74.00 ***	0.57	71.2 ***				
				(1.92)					(3.67)					(2.75)						
Panel C: Frequency of SEOs after the rights issue																				
Control	149	10.71	19.47	-8.75 **	0.93	63.8 ***	21.41	36.08	-14.66 **	0.89	64.4 ***	38.12	64.10	-25.90 **	0.84	59.7 **				
1	73	15.59	17.83	-2.24	0.98	54.8	27.92	51.87	-24.00 *	0.84	61.6 **	63.00	72.00	-8.90	0.95	58.9				
				(-0.85)					(0.65)					(-0.64)						
≥2	41	30.36	23.71	6.60	1.05	48.8	62.90	72.70	-9.80	0.94	48.8	147.60	87.90	59.70	1.32	56.1				
				(-1.4)					(-0.16)					(-0.90)						

Table 6.10 Usage of funds

The table presents a summary of the mean [median] market capitalisation, market-to-book ratios, and the relative issue size (scaled by market capitalisation) for the issuers in each use group at the year-end prior to the offering. Classification guide is presented in appendix 6.1. Median figures are in brackets.

Stated reason	Sample size	Firm size (£ mil.)	Market-to-book ratio	Relative issue size (%)
Acquisition	232	143.09 [40.40]	3.61 [2.08]	63.79 [32.36]
Investment	175	246.28 ^{a,c} [43.83]	2.95 [1.56]	48.05 ^d [29.80]
Reducing debt	128	139.03 [13.32]	4.10 [1.72]	57.78 [32.30]
Others	74	239.55 [43.94]	3.69 [1.62]	50.59 [29.16]
Not Available ^f	209	94.24 ^{d,e} [23.17]	4.10 [1.99]	66.56 [32.98]
Total sample	818	160.77 [31.91]	3.68 [1.87]	58.99 [31.68]

^{a, b} Significantly different from the average sample issuer at 10% and 1%, respectively.

^{c, d, e} Significantly different from the rest at 5%, 10% and 1%, respectively.

^f Reasons of issue were not available on either the Datastream or Extel CD-Rom. It may not necessarily mean firms did not disclose them.

Table 6.11 Long-run stock returns categorised by the stated reason of the offering (Size)

This table presents ABHARs, wealth relatives, and fraction of underperformance for 1-, 3-, and 5-year buy-and-hold strategies categorised by the stated reasons of the offering. It compares the average buy-and-hold abnormal returns between issues made to finance acquisitions, or investments, and issues made to repay debt. The ABHARs are calculated using equation 4.6 where the buy-and-hold abnormal returns are measured from the end of the issuing month and the matching firms chosen on the basis of pre-offering market capitalisation. The “***”, “**”, and “*” indicate that the ABHAR (fraction of underperformance) is significant different from zero (50%) at 1%, 5%, and 10% level, respectively.

Stated reason	N	1-Year				3-Year				5-Year						
		Issuers	Non-Issuers	ABHARs	Wealth Fraction relative Underperform	Issuers	Non-Issuers	ABHARs	Wealth Fraction relative underperform	Issuers	Non-Issuers	ABHARs	Wealth Fraction relative underperform			
Acquisition	232	7.88	14.58	-6.70 **	0.94	52.59	22.21	50.15	-27.90 ***	0.81	61.21 ***	41.90	72.20	-30.30 **	0.82	59.91 ***
t-diff ^a				(0.17)					(-0.44)					(-0.03)		
Investment	175	2.66	11.16	-8.50 **	0.92	58.29 **	25.36	42.61	-17.26 **	0.88	60.00 ***	60.00	61.72	-1.70	0.99	63.43 ***
t-diff ^b				(-0.08)					(0.16)					(0.34)		
Repaying debt	128	11.02	18.93	-7.92	0.93	56.25	36.70	56.63	-19.90	0.87	69.53 ***	56.40	86.10	-29.60	0.84	64.06 ***
Mixed	74	5.96	18.73	-12.76 *	0.89	59.46	24.13	46.30	-22.20 *	0.85	64.86 **	64.70	92.90	-28.20	0.85	63.51 **
N/A	209	9.60	19.73	-10.13 **	0.92	57.89	0.41	32.77	-32.36 ***	0.76	65.07 ***	-6.04	56.40	-62.40 ***	0.60	67.46 ***

^a difference between acquisitions and repaying debt

^b difference between investment and repaying debt

Table 6.12 Long-run stock returns categorised by the stated reason of the offering (Size and industry)

This table presents ABHARs, wealth relatives, and fraction of underperformance for 1-, 3-, and 5-year buy-and-hold strategies categorised by the stated reasons of the offering. It compares the average buy-and-hold abnormal returns between issues made to finance acquisitions, or investments, or issues made to repay debt. The ABHARs are calculated using equation 4.6 where the buy-and-hold abnormal returns are measured from the end of the issuing month and the matching firms chosen on the basis of pre-offering market capitalisation and industry. The “***”, “**”, and “*” indicate that the ABHAR (fraction of underperformance) is significant different from zero (50%) at 1%, 5%, and 10% level, respectively.

Stated reason	N	1-Year				3-Year				5-Year						
		Issuers	Non-Issuers	ABHARs	Wealth Fraction relative Underperform	Issuers	Non-Issuers	ABHARs	Wealth Fraction relative underperform	Issuers	Non-Issuers	ABHARs	Wealth Fraction relative underperform			
Acquisition	232	7.88	12.55	-4.67	0.96	49.14	22.21	38.88	-16.67 *	0.88	58.19 **	41.90	74.50	-32.60 *	0.81	54.31
t-diff ^a				(0.44)					(0.37)					(0.6)		
Investment	175	2.66	15.29	-12.62 ***	0.89	61.14 ***	25.36	57.86	-32.51 ***	0.79	66.29 ***	60.00	90.80	-30.80	0.84	64.00 ***
t-diff ^b				(-0.59)					(-0.57)					(0.57)		
Repaying debt	128	11.02	19.05	-8.03	0.93	60.16 **	36.70	59.59	-22.90	0.86	62.50 ***	56.40	103.90	-47.50 **	0.77	63.28 ***
Mixed	74	5.96	13.70	-7.73	0.93	60.81 *	24.13	59.90	-35.80 **	0.78	60.81 *	64.70	84.30	-19.60	0.89	56.76
N/A	209	9.60	14.12	-4.51	0.96	57.42 **	0.41	35.97	-35.56 ***	0.74	70.33 ***	-6.04	53.58	-59.61 ***	0.61	71.29 ***

^a difference between acquisitions and repaying debt

^b difference between investment and repaying debt

Table 6.13 Long-run stock returns categorised by the stated reason of the offering (Size and market-to-book ratio)

This table presents ABHARs, wealth relatives, and fraction of underperformance for 1-, 3-, and 5-year buy-and-hold strategies categorised by the stated reasons of the offering. It compares the average buy-and-hold abnormal returns between issues made to finance acquisitions, or investments, and issues made to repay debt. The ABHARs are calculated using equation 4.6 where the buy-and-hold abnormal returns are measured from the end of the issuing month and the matching firms chosen on the basis of pre-offering market capitalisation and market-to-book ratio. The “***”, “**”, and “*” indicate that the ABHAR (fraction of underperformance) is significant different from zero (50%) at 1%, 5%, and 10% level, respectively.

Stated reason	N	1-Year				3-Year				5-Year				
		Issuers	Non-Issuers	ABHARs	Wealth Fraction relative Underperform	Issuers	Non-Issuers	ABHARs	Wealth Fraction relative underperform	Issuers	Non-Issuers	ABHARs	Wealth Fraction relative underperform	
Acquisition	232	7.88	17.51	-9.63 ***	0.92	22.21	52.48	-30.27 ***	0.80	41.90	95.80	-53.90 ***	0.72	54.31
t-diff ^a				(-0.21)				(-0.59)						
Investment	175	2.66	15.31	-12.65 ***	0.89	25.36	51.06	-25.71 ***	0.83	60.00	91.20	-31.10	0.84	64.00 ***
t-diff ^b				(-0.59)				(-0.35)						
Repaying debt	128	11.02	18.92	-7.91	0.93	36.70	55.80	-19.10	0.88	56.40	87.00	-30.60 *	0.84	63.28 ***
Mixed	74	5.96	15.50	-9.54 *	0.92	24.13	45.85	-21.70 **	0.85	64.70	58.20	6.50	1.04	56.76
N/A	209	9.60	21.75	-12.14 ***	0.90	0.41	31.90	-31.48 ***	0.76	-6.04	55.23	-61.30 ***	0.61	71.29 ***

^a difference between acquisitions and repaying debt

^b difference between investment and repaying debt

Table 6.14 Long-run stock performance categorised by firm size and market-to-book ratios (Size)

This table summarises the mean stock returns of post-issue 1-, 3-, and 5-year buy-and-hold strategies for UK firms conducting rights issues during the 1986-1995 period, categorised by firms size and market-to-book ratio quintiles. Buy-and-hold returns are measured from the end of issuing month and are calculated using equation 4.6. Nonissuing firms are picked based on firm size. Wealth relatives are defined as the ratio of one plus the mean buy-and-hold return on the issuing firms to one plus mean buy-and-hold return on the matching firms. The fraction of underperformance is the fraction of the quintile sample whose buy-and-hold are less than their matching firms' buy-and-hold returns. The significance of the mean buy-and-hold abnormal return is tested using equation 4.22 whereas the difference of the fraction of underperformance from 50% is tested using equation 4.23. "****", "***", and "*" indicate significance at 0.01, 0.05 and 0.10 levels, respectively.

Sample size	1-Year					3-Year					5-Year					
	Issuers	Non-issuers	ABHARs	Wealth relative	Fraction underperform	Issuers	Non-issuers	ABHARs	Wealth relative	Fraction underperform	Issuers	Non-issuers	ABHARs	Wealth relative	Fraction underperform	
Panel A: Firms size quintiles ^a																
Smallest	164	14.14	23.28	-9.14	0.93	54.27	24.99	55.38	-30.38 **	0.80	68.29 ***	65.54	90.73	-25.19	0.87	65.24 ***
2	163	2.22	13.61	-11.39 **	0.90	59.15 **	16.78	36.90	-20.12 *	0.85	62.20 ***	22.49	64.38	-41.89 ***	0.75	64.02 ***
3	164	8.48	18.69	-10.21 **	0.91	58.90 **	15.10	53.30	-38.19 ***	0.75	66.26 ***	32.74	79.23	-46.49 **	0.74	65.03 ***
4	163	5.06	12.70	-7.64 *	0.93	56.44 *	13.56	37.01	-23.44 ***	0.83	63.80 ***	24.28	58.39	-34.11 ***	0.78	66.26 ***
Largest	164	7.70	12.82	-5.12 **	0.95	53.05	28.27	41.25	-12.98 **	0.91	57.32 *	44.19	57.12	-12.93	0.92	57.32 *
									(-1.11)							(-0.35)
Panel B: Market-to-book ratio quintiles ^b																
Lowest	165	12.75	21.54	-8.79 **	0.93	58.79 **	35.12	58.51	-23.39 **	0.85	61.82 ***	78.62	99.22	-20.60	0.90	61.82 ***
2	162	10.82	12.95	-2.13	0.98	47.53	24.97	33.32	-8.35	0.94	54.32	29.96	48.44	-18.49 *	0.88	59.26 **
3	164	6.72	17.99	-11.27 ***	0.90	57.32 *	24.72	43.56	-18.84 *	0.87	60.37 ***	33.91	69.91	-36.00 **	0.79	60.37 ***
4	163	0.04	13.11	-13.07 ***	0.88	61.35 ***	-4.44	35.55	-39.99 ***	0.71	74.23 ***	3.05	57.38	-54.33 ***	0.65	74.23 ***
Highest	164	7.24	15.42	-8.18	0.93	56.71 *	18.23	52.61	-34.38 **	0.77	67.07 ***	43.26	74.40	-31.14	0.82	62.20 ***
									(-0.63)							(0.29)

^a Market capitalisation at the year-end prior to the offering. The break points are, £6.48m, £19.54m, £46.75m, and £138.54m, for the first, to fourth quintiles, respectively.

^b Ratio of market capitalisation to net tangible assets at the year end prior to the offering. The breakpoints are 1.03, 1.51, 2.3, and 3.67, for the first to fourth quintiles, respectively.

Table 6.16 Long-run stock performance categorised by firm size and market-to-book ratios (Size and market-to-book ratio)

This table summarises the mean stock returns of post-issue 1-, 3-, and 5-year buy-and-hold strategies for UK firms conducting rights issues during the 1986-1995 period, categorised by firms size and market-to-book ratio quintiles. Buy-and-hold returns are measured from the end of issuing month and are calculated using equation 4.6. Nonissuing firms are picked based on size and market-to-book ratio. Wealth relatives are defined as the ratio of one plus the mean buy-and-hold return on the issuing firms to one plus mean buy-and-hold return on the matching firms. The fraction of underperformance is the fraction of the quintile sample whose buy-and-hold returns are less than their matching firms' buy-and-hold returns. The significance of the mean buy-and-hold abnormal return is tested using equation 4.22 whereas the difference of the fraction of underperformance from 50% is tested using equation 4.23. "****", "***", and "**" indicate significance at

Sample size	1-Year					3-Year					5-Year					
	Issuers	Non-issuers	ABHARs	Wealth relative	Fraction underperform	Issuers	Non-issuers	ABHARs	Wealth relative	Fraction underperform	Issuers	Non-issuers	ABHARs	Wealth relative	Fraction underperform	
Panel A: Firms size quintiles ^a																
Smallest	164	14.14	22.84	-8.70	0.93	62.80 ***	24.99	44.17	-19.17	0.87	62.20 ***	65.54	69.19	-3.65	0.98	65.24 ***
2	163	2.22	18.20	-15.98 ***	0.86	59.76 **	16.78	55.13	-38.35 ***	0.75	67.07 ***	22.49	100.16	-77.67 ***	0.61	70.12 ***
3	164	8.48	19.12	-10.64 **	0.91	58.90 **	15.10	57.20	-42.10 ***	0.73	65.64 ***	32.74	87.06	-54.33 ***	0.71	62.58 ***
4	163	5.06	15.17	-10.11 **	0.91	59.51 **	13.56	36.21	-22.65 ***	0.83	61.96 ***	24.28	63.65	-39.36 ***	0.76	61.96 ***
Largest	164	7.70	15.48	-7.78 ***	0.93	56.10	28.27	41.51	-13.24 **	0.91	58.54 **	44.19	78.22	-34.03 ***	0.81	57.93 **
(-0.14)																
Panel B: Market-to-book ratio quintiles ^b																
Lowest	165	12.75	21.91	-9.16 **	0.92	59.39 **	35.12	62.02	-26.90 **	0.83	64.85 ***	78.62	88.61	-9.99	0.95	65.45 ***
2	162	10.82	20.43	-9.62 **	0.92	59.26 **	24.97	36.76	-11.79	0.91	59.88 **	29.96	50.26	-20.30 *	0.86	58.02 **
3	164	6.72	18.97	-12.25 ***	0.90	60.98 ***	24.72	50.15	-25.44 **	0.83	64.02 ***	33.91	102.88	-68.97 ***	0.66	63.41 ***
4	163	0.04	12.40	-12.35 **	0.89	60.74 ***	-4.44	33.22	-37.66 ***	0.72	66.26 ***	3.05	59.49	-56.44 ***	0.65	65.64 ***
Highest	164	7.24	17.07	-9.83 *	0.92	56.71 *	18.23	51.77	-33.54 ***	0.78	60.37 ***	43.26	96.56	-53.30 ***	0.73	65.24 ***
(0.09)																

^a Market capitalisation at the year-end prior to the offering. The break points are, £6.48m, £19.54m, £46.75m, and £138.54m, for the first, to fourth quintiles, respectively.

^b Ratio of market capitalisation to net tangible assets at the year end prior to the offering. The breakpoints are 1.03, 1.51, 2.3, and 3.67, for the first to fourth quintiles, respectively.

Table 6.17 Long-run stock returns categorised by firm age since IPO (Size)

This table presents mean buy-and-hold stock returns, wealth relatives, and the fraction of underperformance, for post-issue 1-, 3-, and 5-year buy-and-hold strategies for UK firms conducting rights issues during the 1986-1995 period, categorised by firm age since IPO. That is, whether the issuer had gone public within the five-(three-)year period prior to the offering. Buy-and-hold returns are measured from the end of issuing month and are calculated using equation 4.6. Nonissuing firms are picked based on firm size. Wealth relatives are defined as the ratio of one plus the mean buy-and-hold return on the issuing firms to one plus mean buy-and-hold return on the matching firms. The fraction of underperformance is the fraction of the subsample of issuers whose buy-and-hold are less than their matching firms' buy-and-hold returns. The significance of the mean buy-and-hold abnormal return is tested using equation 4.22, whereas the difference of the fraction of underperformance from 50% is tested using equation 4.23. "***", "**", and "*" indicate significance at 0.01, 0.05 and 0.10 levels, respectively.

Sample size	1-Year				3-Year				5-Year							
	Issuers	Non-issuers	ABHARs	Wealth relative	Fraction underperform	Issuers	Non-issuers	ABHARs	Wealth relative	Fraction underperform	Issuers	Non-issuers	ABHARs	Wealth relative	Fraction underperform	
≤ 3-Years	105	-0.11	13.75	-13.86 **	0.88	54.29	-3.07	49.19	-52.27 ***	0.65	67.62 ***	7.07	76.47	-69.40 **	0.61	68.57 ***
> 3-Years	713	8.65	16.59	-7.94 ***	0.93	56.66 ***	23.12	44.11	-21.00 ***	0.85	62.97 ***	42.41	69.02	-26.61 ***	0.84	62.83 ***
				(-0.95)					(-1.82)					(-1.39)		
≤ 5-Years	198	-0.84	14.85	-15.68 ***	0.86	59.09 **	5.36	41.93	-36.56 ***	0.74	65.66 ***	21.78	66.38	-44.60 **	0.73	66.16 ***
> 5-Years	620	10.19	16.66	-6.47 ***	0.94	55.48 ***	24.35	45.67	-21.32 ***	0.85	62.90 ***	43.01	71.12	-28.11 ***	0.84	62.74 ***
				(-1.88)					(-1.29)					(-0.79)		

Table 6.18 Long-run stock returns categorised by firm age since IPO (Size and industry)

This table presents mean buy-and-hold stock returns, wealth relatives, and the fraction of underperformance, for post-issue 1-, 3-, and 5-year buy-and-hold strategies for UK firms conducting rights issues during the 1986-1995 period, categorised by firm age since IPO. That is, whether the issuer had gone public within the five-(three-)year period prior to the offering. Buy-and-hold returns are measured from the end of issuing month and are calculated using equation 4.6. Nonissuing firms are picked based on firm size and industry. Wealth relatives are defined as the ratio of one plus the mean buy-and-hold return on the issuing firms to one plus mean buy-and-hold return on the matching firms. The fraction of underperformance is the fraction of the subsample of issuers whose buy-and-hold are less than their matching firms' buy-and-hold returns. The significance of the mean buy-and-hold abnormal return is tested using equation 4.22, whereas the difference of the fraction of underperformance from 50% is tested using equation 4.23. "****", "***", and "*" indicate significance at 0.01, 0.05 and 0.10 levels, respectively.

Sample size	1-Year				3-Year				5-Year							
	Issuers	Non-issuers	ABHARs	Wealth relative	Fraction underperform	Issuers	Non-issuers	ABHARs	Wealth relative	Fraction underperform	Issuers	Non-issuers	ABHARs	Wealth relative	Fraction underperform	
≤3-Years	105	-0.11	15.95	-16.07 ***	0.86	57.14	-3.07	42.70	-45.78 ***	0.68	69.52 ***	7.07	80.89	-73.82 ***	0.59	66.67 ***
>3-Years	713	8.65	14.46	-5.82 ***	0.95	56.52 ***	23.12	48.03	-24.91 ***	0.83	63.11 ***	42.41	77.73	-35.33 ***	0.80	61.71 ***
				(-1.75)					(-1.58)					(-1.51)		
≤5-Years	198	-0.84	13.44	-14.28 ***	0.87	60.61 ***	5.36	39.72	-34.36 ***	0.75	67.17 ***	21.78	85.15	-63.37 ***	0.66	64.14 ***
>5-Years	620	10.19	15.04	-4.85 **	0.96	55.32 ***	24.35	49.78	-25.43 ***	0.83	62.90 ***	43.01	75.90	-32.89 ***	0.81	61.77 ***
				(-2.05)					(-0.89)					(-1.59)		

Table 6.19 Long-run stock returns categorised by firm age since IPO (Size and market-to-book ratio)

This table presents mean buy-and-hold stock returns, wealth relatives, and the fraction of underperformance, for post-issue 1-, 3-, and 5-year buy-and-hold strategies for UK firms conducting rights issues during the 1986-1995 period, categorised by firm age since IPO. That is, whether the issuer had gone public within the five-(three-)year period prior to the offering. Buy-and-hold returns are measured from the end of issuing month and are calculated using equation 4.6. Nonissuing firms are picked based on firm size and market-to-book ratio. Wealth relatives are defined as the ratio of one plus the mean buy-and-hold return on the issuing firms to one plus mean buy-and-hold return on the matching firms. The fraction of underperformance is the fraction of the subsample of issuers whose buy-and-hold are less than their matching firms' buy-and-hold returns. The significance of the mean buy-and-hold abnormal return is tested using equation 4.22, whereas the difference of the fraction of underperformance from 50% is tested using equation 4.23. "****", "***", and "*" indicate significance at 0.01, 0.05 and 0.10 levels, respectively.

Sample size	1-Year				3-Year				5-Year			
	Issuers	Non-issuers	Wealth relative	Fraction underperform	Issuers	Non-issuers	Wealth relative	Fraction underperform	Issuers	Non-issuers	Wealth relative	Fraction underperform
≤3-Years	-0.11	18.33	-18.44 ***	60.95 **	-3.07	46.12	-49.20 ***	67.62 ***	7.07	77.71	-70.64 ***	64.76 ***
>3-Years	8.65	18.14	-9.49 ***	59.19 ***	23.12	46.95	-23.83 ***	62.41 ***	42.41	79.95	-37.55 ***	63.39 ***
			(-1.32)				(-1.63)				(-1.47)	
≤5-Years	-0.84	16.83	-17.67 ***	61.62 ***	5.36	44.25	-38.89 ***	62.63 ***	21.78	77.45	-55.67 ***	64.65 ***
>5-Years	10.19	18.59	-8.40 ***	58.71 ***	24.35	47.67	-23.32 ***	63.23 ***	43.01	80.37	-37.36 ***	63.23 ***
			(-1.73)				(-1.38)				(-1.06)	

Table 6.20 Long-run stock returns categorised by industry (Size)

This table presents mean buy-and-hold stock returns, wealth relatives, and the fraction of underperformance, for post-issue 1-, 3-, and 5-year buy-and-hold strategies for UK firms conducting rights issues during the 1986-1995 period, categorised by industry. Buy-and-hold returns are measured from the end of issuing month and are calculated using equation 4.6. Nonissuing firms are picked based on firm size. Wealth relatives are defined as the ratio of one plus the mean buy-and-hold return on the issuing firms to one plus mean buy-and-hold return on the matching firms. The fraction of underperformance is the fraction of the industry sector issuers whose buy-and-hold are less than their matching firms' buy-and-hold returns. The significance of the mean buy-and-hold abnormal return is tested using equation 4.22, whereas the difference of the fraction of underperformance from 50% is tested using equation 4.23. "****", "***", and "**" indicate significance at 0.01, 0.05 and 0.10 levels, respectively.

	Sample size	1-Year				3-Year				5-Year						
		Issuers	Non-issuers	ABHARs	Wealth relative	Fraction underperform	Issuers	Non-issuers	ABHARs	Wealth relative	Fraction underperform	Issuers	Non-issuers	ABHARs	Wealth relative	Fraction underperform
1. Mining	29	15.14	-0.58	15.72	1.16	41.38	31.73	8.90	22.82	1.21	44.83	41.99	32.05	9.94	1.08	62.07
2. Building	97	6.14	18.86	-12.72 *	0.89	62.89 **	27.31	51.31	-23.99	0.84	67.01 ***	62.01	63.11	-1.10	0.99	64.95 ***
3. Other industrials	48	14.95	17.95	-3.00	0.97	52.08	22.94	54.70	-31.76 **	0.79	68.75 ***	21.83	79.14	-57.31 **	0.68	68.75 ***
4. Electronic & Electrical	36	15.58	10.46	5.11	1.05	47.22	34.80	13.20	21.60	1.19	50.00	63.34	1.79	61.55 *	1.60	36.11 *
5. Engineering	129	3.96	21.33	-17.37 ***	0.86	62.79 ***	2.78	52.20	-49.42 ***	0.68	68.99 ***	9.66	88.46	-78.80 ***	0.58	66.67 ***
6. Paper & printing	32	10.83	8.33	2.50	1.02	46.88	15.27	31.82	-16.55	0.87	62.50	21.63	50.69	-29.06	0.81	62.50
7. Textiles	45	1.88	15.50	-13.61	0.88	62.22	-4.44	32.30	-36.75 *	0.72	75.56 ***	-8.46	26.85	-35.31 *	0.72	68.89 **
8. Foods & Breweries	46	-0.80	8.88	-9.68	0.91	52.17	9.09	45.85	-36.76 *	0.75	69.57 ***	4.43	88.07	-83.63 **	0.56	76.09 ***
9. Pharmaceuticals	30	7.63	12.10	-4.46	0.96	46.67	5.36	36.99	-31.63 *	0.77	63.33	11.67	65.01	-53.34 ***	0.68	73.33 **
10. Distributors	56	7.18	13.63	-6.45	0.94	53.57	4.13	36.64	-32.50 *	0.76	62.50 *	12.02	63.64	-51.61	0.68	53.57
11. Leisure & Hotels	44	7.57	17.42	-9.85	0.92	52.27	36.78	59.16	-22.38	0.86	56.82	53.16	73.87	-20.71	0.88	52.27
12. Media	30	7.40	14.76	-7.35	0.94	50.00	22.03	38.43	-16.40	0.88	56.67	41.76	68.29	-26.53	0.84	66.67 *
13. Retailers	41	5.29	15.68	-10.39	0.91	53.66	51.85	62.53	-10.67	0.93	60.98	78.78	94.79	-16.00	0.92	56.10
14. Support services	48	12.21	25.16	-12.95	0.90	60.42	26.25	58.11	-31.86	0.80	66.67 **	93.08	122.84	-29.76	0.87	64.58 **
15. Other services	31	7.57	18.13	-10.56	0.91	67.74 **	32.10	50.92	-18.82	0.88	64.52	97.59	86.38	11.21	1.06	70.97 **
16. Financials	28	7.65	14.26	-6.61	0.94	46.43	30.43	36.41	-5.98	0.96	50.00	84.53	58.88	25.66	1.16	50.00
17. Property	48	10.36	19.74	-9.38	0.92	64.58 **	26.36	43.71	-17.35	0.88	60.42	19.80	64.79	-44.99 ***	0.73	75.00 ***

Table 6.21 Long-run stock returns categorised by industry (Size and industry)

This table presents mean buy-and-hold stock returns, wealth relatives, and the fraction of underperformance, for post-issue 1-, 3-, and 5-year buy-and-hold strategies for UK firms conducting rights issues during the 1986-1995 period, categorised by industry. Buy-and-hold returns are measured from the end of issuing month and are calculated using equation 4.6. Nonissuing firms are picked based on size and industry. Wealth relatives are defined as the ratio of one plus the mean buy-and-hold return on the issuing firms to one plus mean buy-and-hold return on the matching firms. The fraction of underperformance is the fraction of the industry sector issuers whose buy-and-hold are less than their matching firms' buy-and-hold returns. The significance of the mean buy-and-hold abnormal return is tested using equation 4.22, whereas the difference of the fraction of underperformance from 50% is tested using equation 4.23. "****", "***", "**", and "*" indicate significance at 0.01, 0.05 and 0.10 levels, respectively.

	Sample size	1-Year				3-Year				5-Year						
		Issuers	Non-issuers	ABHARs	Wealth relative	Fraction underperform	Issuers	Non-issuers	ABHARs	Wealth relative	Fraction underperform	Issuers	Non-issuers	ABHARs	Wealth relative	Fraction underperform
1. Mining	29	15.14	15.24	-0.10	1.00	51.72	31.73	20.29	11.44	1.10	55.17	41.99	36.60	5.39	1.04	44.83
2. Building	97	6.14	9.30	-3.16	0.97	54.64	27.31	34.19	-6.88	0.95	62.89 **	62.01	50.97	11.04	1.07	61.86 **
3. Other industrials	48	14.95	18.96	-4.01	0.97	62.50 *	22.94	40.81	-17.87	0.87	66.67 **	21.83	48.76	-26.93 **	0.82	66.67 **
4. Electronic & Electrical	36	15.58	7.49	8.08	1.08	47.22	34.80	29.33	5.47	1.04	58.33	63.34	60.78	2.56	1.02	55.56
5. Engineering	129	3.96	13.16	-9.20 **	0.92	58.91 **	2.78	40.58	-37.80 ***	0.73	65.12 ***	9.66	59.75	-50.09 ***	0.69	61.24 **
6. Paper & printing	32	10.83	20.20	-9.37	0.92	56.25	15.27	45.94	-30.67 **	0.79	71.88 **	21.63	75.11	-53.48 **	0.69	65.63 *
7. Textiles	45	1.88	0.45	1.43	1.01	48.89	-4.44	5.28	-9.72	0.91	64.44 *	-8.46	7.89	-16.35	0.85	68.89 **
8. Foods & Breweries	46	-0.80	12.52	-13.32 *	0.88	54.35	9.09	47.68	-38.59 **	0.74	67.39 **	4.43	47.49	-43.06 ***	0.71	67.39 **
9. Pharmaceuticals	30	7.63	25.83	-18.19 *	0.86	66.67 *	5.36	98.48	-93.12 ***	0.53	83.33 ***	11.67	180.22	-168.55 ***	0.40	90.00 ***
10. Distributors	56	7.18	13.62	-6.44	0.94	58.93	4.13	47.51	-43.38 ***	0.71	66.07 **	12.02	78.89	-66.87	0.63	58.93
11. Leisure & Hotels	44	7.57	22.53	-14.96 *	0.88	63.64 *	36.78	77.33	-40.55	0.77	59.09	53.16	124.28	-71.12 *	0.68	59.09
12. Media	30	7.40	53.80	-46.39 ***	0.70	73.33 **	22.03	101.21	-79.18 ***	0.61	73.33 **	41.76	164.56	-122.81 ***	0.54	76.67 ***
13. Retailers	41	5.29	11.78	-6.49	0.94	58.54	51.85	48.91	2.94	1.02	56.10	78.78	124.81	-46.03	0.80	48.78
14. Support services	48	12.21	18.20	-5.99	0.95	56.25	26.25	87.31	-61.06 **	0.67	68.75 **	93.08	172.79	-79.71	0.71	64.58 **
15. Other services	31	7.57	13.80	-6.23	0.95	61.29	32.10	59.27	-27.16	0.83	64.52	97.59	70.39	27.19	1.16	58.06
16. Financials	28	7.65	9.95	-2.30	0.98	46.43	30.43	35.92	-5.49	0.96	50.00	84.53	85.22	-0.69	1.00	50.00
17. Property	48	10.36	6.66	3.70	1.03	43.75	26.36	32.90	-6.54	0.95	54.17	19.80	52.50	-32.70 *	0.79	64.58 **

Table 6.22 Long-run stock returns categorised by industry (Size and market-to-book ratio)

This table presents mean buy-and-hold stock returns, wealth relatives, and the fraction of underperformance, for post-issue 1-, 3-, and 5-year buy-and-hold strategies for UK firms conducting rights issues during the 1986-1995 period, categorised by industry. Buy-and-hold returns are measured from the end of issuing month and are calculated using equation 4.6. Nonissuing firms are picked based on size and market-to-book ratio. Wealth relatives are defined as the ratio of one plus the mean buy-and-hold return on the issuing firms to one plus mean buy-and-hold return on the matching firms. The fraction of underperformance is the fraction of the industry sector issuers whose buy-and-hold are less than their matching firms' buy-and-hold returns. The significance of the mean buy-and-hold abnormal return is tested using equation 4.22, whereas the difference of the fraction of underperformance from 50% is tested using equation 4.23. "****", "***", and "**" indicate significance at 0.01, 0.05 and 0.10 levels, respectively.

	Sample size	1-Year				3-Year				5-Year						
		Issuers	Non-issuers	ABHARs	Wealth relative	Fraction underperform	Non-issuers	ABHARs	Wealth relative	Fraction underperform	Issuers	Non-issuers	ABHARs	Wealth relative	Fraction underperform	
1. Mining	29	15.14	15.31	-0.17	1.00	55.17	31.73	41.66	-9.93	0.93	51.72	41.99	115.42	-73.43	0.66	55.17
2. Building	97	6.14	18.49	-12.35 *	0.90	67.01 ***	27.31	53.86	-26.55 *	0.83	73.20 ***	62.01	76.74	-14.73	0.92	68.04 ***
3. Other industrials	48	14.95	24.63	-9.68	0.92	62.50 *	22.94	59.37	-36.43 ***	0.77	64.58 **	21.83	100.47	-78.64 ***	0.61	75.00 ***
4. Electronic & Electrical	36	15.58	31.38	-15.80	0.88	52.78	34.80	62.48	-27.68	0.83	66.67 **	63.34	94.24	-30.90	0.84	61.11
5. Engineering	129	3.96	13.25	-9.30 **	0.92	59.69 **	2.78	36.46	-33.68 ***	0.75	65.12 ***	9.66	63.73	-54.07 ***	0.67	65.12 ***
6. Paper & printing	32	10.83	22.85	-12.02	0.90	50.00	15.27	33.58	-18.30	0.86	53.13	21.63	73.91	-52.28 *	0.70	56.25
7. Textiles	45	1.88	18.98	-17.10 **	0.86	64.44 *	-4.44	26.08	-30.52 **	0.76	77.78 ***	-8.46	85.97	-94.43 ***	0.49	80.00 ***
8. Foods & Breweries	46	-0.80	17.51	-18.31 **	0.84	60.87	9.09	59.27	-50.17 *	0.68	54.35	4.43	74.74	-70.30 ***	0.60	56.52
9. Pharmaceuticals	30	7.63	21.16	-13.52	0.89	53.33	5.36	55.88	-50.53 *	0.68	60.00	11.67	108.07	-96.40 ***	0.54	70.00 **
10. Distributors	56	7.18	20.23	-13.05 **	0.89	66.07 **	4.13	37.48	-33.35 **	0.76	66.07 **	12.02	51.32	-39.30 **	0.74	60.71
11. Leisure & Hotels	44	7.57	16.01	-8.44	0.93	47.73	36.78	48.08	-11.31	0.92	56.82	53.16	81.83	-28.67	0.84	61.36
12. Media	30	7.40	10.66	-3.26	0.97	60.00	22.03	37.75	-15.72	0.89	60.00	41.76	81.96	-40.20 *	0.78	70.00 **
13. Retailers	41	5.29	15.26	-9.97	0.91	53.66	51.85	61.84	-9.98	0.94	60.98	78.78	107.27	-28.49	0.86	63.41 *
14. Support services	48	12.21	8.57	3.64	1.03	47.92	26.25	57.49	-31.23	0.80	60.42	93.08	101.38	-8.30	0.96	56.25
15. Other services	31	7.57	27.76	-20.19 *	0.84	67.74 **	32.10	75.41	-43.30 *	0.75	61.29	97.59	92.81	4.78	1.02	54.84
16. Financials	28	7.65	22.79	-15.14 **	0.88	57.14	30.43	41.42	-10.99	0.92	71.43 **	84.53	74.19	10.34	1.06	57.14
17. Property	48	10.36	18.31	-7.95	0.93	66.67 **	26.36	26.94	-0.58	1.00	47.92	19.80	39.05	-19.25	0.86	56.25

1.0 Acquisition		
1.1 Acquisition (sole) of a company named and/ or announced on same day		164
1.2 Acquisition of a Company named and working capital of the enlarged group and investment in the acquired company		20
1.3 Acquisition plans (recent, current and future (no specific company named)		38
1.4 Acquisition of a company and investment in it for modernisation and development, development capital and working capital		3
1.5 Building war chest for future acquisition such as repayment of debt, balance sheet and gearing reduction pending acquisition		7
2.0 Investment		
2.1 Investment in new assets, e.g. land, property, stores, warehouses, pubs, restaurants		34
2.2 Investment in other companies shares e.g. minority, controlling or working stake		6
2.3 Investment in development of current business/operations		36
2.4 Investment in product or technology development and marketing		15
2.5 investment in profitable projects or growth opportunities		14
2.6 Investment/programme/plans schemes		9
2.7 Investment in production/manufacturing facilities/location/distributions		16
2.8 Expansion		29
2.9 Capital expenditure		16
3.0 Reducing debt		
3.1 reduce/repay debt/ borrowing		84
3.2 Reduce borrowing and provide working capital		11
3.3 Reduce debt and strengthen balance sheet		12
3.4 Additional working capital and other cash resources/ alleviate financial difficulties		21
4.0 Mixed: Acquisition/investment and reducing debt		
4.1 Acquisitions and debt reduction		8
4.2 Acquisition plans and debt reduction		12
4.3 Reduce borrowing and investment/ expansion		22
5.0 Mixed: Others		
5.1 Reduce gearing		18
5.2 strengthen balance sheet/financial position		2
5.3 company reorganisation		6
5.4 strengthen capital base		1
5.5 other uses		5
6.0 N/A		
6.1 Issue purpose is not disclosed on DataStream or Extel		209
Total		<u>818</u>

CHAPTER SEVEN

MANAGERIAL SHARE OWNERSHIP AND LONG-RUN PERFORMANCE OF UK RIGHTS ISSUES

7.1 Introduction

For many years now managerial share ownership (MSO) has been shown to be an important influence on the way public corporations are managed. For example, according to the agency theory of Jensen and Meckling (1976), managerial share ownership plays a role in mitigating the conflict of interests between managers and outside shareholders, implying that the value of the firm increases (decreases) with increases (decreases) in managerial stake in the firm. As a strategy, therefore, managers are encouraged to own shares in the firms they manage. Leland and Pyle (1977) show that managerial equity ownership conveys information to outside shareholders about managers' private valuation of the firm. In this case, for any event firm, an increase or decrease in managerial share ownership may signal managers' valuation of the expected value consequences of the event.

Managerial shareholdings benefit the event firm in a number of ways. Firstly, since higher (low) MSO increases (decreases) goal congruence, the market would reward (penalise) an event firm with large (small) managerial shareholding believing that a good (bad) decision was taken. For example, the market would normally impose a penalty for a release of bad news such as an equity-offering announcement, but the penalty may be lower if the level of managerial shareholding in the firm is sufficiently high.

Secondly, the decisions taken are likely to have long-term effects on the firm's future cash flows. Managers, having enjoyed the market's credibility and worried about losing their reputation as well as value on their personal investment, have incentives to oversee the intended outcomes of their decisions. Such incentives would be higher the higher the managers' personal stakes in the firm's equity capital.

Thirdly, the agency hypothesis of Jensen and Meckling (1976) suggests that firms experiencing significant reduction (increase) in managerial share ownership would show poorer (better) performance. For example, as the managers' fraction of ownership in the firm's equity falls, their incentive to devote significant effort to creative activities such as searching out for new profitable ventures or new technologies falls. They may in fact avoid such ventures simply because they would require too much effort on their part to manage or learn about new technologies. Avoidance of these personal costs and the anxiety that goes with them also represent a source of "on the job" utility and it can result in the value of the firm being substantially lower than it otherwise would be. In addition, the fall in the fraction of ownership reduces managers' claim on the expected project outcome, which in turn may encourage them to expropriate corporate resources in the form of perquisites. Consequently, this will affect the price prospective shareholders will be willing to pay for the firm's shares to reflect the monitoring cost they will have to incur to minimise the potential divergence of managers' interests from their interests.

The primary goal of this chapter is to investigate whether the post-offering level of corporate directors' shareholdings in the UK rights issuing firms and the changes in their shareholdings around the offering can explain the observed long-run stock performance after the issue. In particular, the chapter seeks to establish: (i) the post-offering level of managerial share ownership, (ii) the extent to which the level of managerial share ownership changes around the offering, and (iii) whether the post-offering level of, and the change in, managerial shareholding, may help to determine firms that are more likely to underperform/outperform the benchmarks used.

Firstly, I estimate both the post-offering level of directors' shareholding in the issuing firms and their changes around the rights issue. The post-offering shareholding levels reflect in a way the level of managerial commitment, which may also depend on the pre-offering levels from which these levels changed following the rights issue. For example, since in rights issues the new shares are offered to existing shareholders on *pro rata* basis, a significant change in directors' shareholding may represent the managers' revised expectation of the future prospects of the project for which the money is being raised.

Consequently, this will affect the price at which shares will trade in the post-offering period.

Secondly, I investigate whether the post-offering levels of, and changes in, managerial share ownership around rights issues can explain the long-run performance. The buy-and-hold abnormal returns are partitioned into quartiles of post-offering shareholding by corporate directors, and into quartiles of changes in managerial shareholding around the offering. Given the theoretical predictions above, one would expect the average buy-and-hold abnormal returns to differ with the fraction of issuers' shares owned by corporate directors. Likewise, according to Jensen and Meckling's (1976) agency theory, issuers experiencing more reduction in managerial share ownership around the offerings will show poorer performance.

Thirdly, Stulz (1988) argue that the effects of the change in managerial shareholding depends on whether the change sufficiently provides managers with gain/loss in their influence on both operating decisions and defence against market for corporate control. Morck, Shleifer, and Vishny (1988) add that when the fraction of managerial share ownership is low, an increase aligns managers' interests with those of shareholders, but when it is high, a further increase entrenches the managers. These together imply that the impact of the changes in managerial share ownership around the rights issues on the post-offering abnormal returns would depend on whether the pre-offering level was low or high. To examine this, the sample is segmented into high (above median) and low (below median) pre-offering managerial share ownership groups. In each of the two groups, the average buy-and-hold abnormal returns are compared between issuers the issuers experiencing above, and the issuers experiencing below, median change in managerial shareholding around the offering. This approach is similar to one used in Palia and Litchenberg (1999). A slight refinement is testing whether, for the issuers experiencing either above or below median change in managerial shareholding, there is a difference in average abnormal returns between issuers who had above, and issuers who had below, median pre-offering level of managerial shareholding.

The results show that corporate directors hold an average (median) of 20.47% (16.34%) of the issuing firms' outstanding shares after the offering,

representing a statistically significant average (median) decrease of -5.81% (-2.45%) from one year before the offering. Issuers with managerial share ownership within the middle range (16-28%) show no evidence of significant underperformance. This evidence indicates some non-linearity between managerial share ownership and issuers' abnormal returns. However, the direction contradicts with what the entrenchment theories predict in which one would expect issuers in this level to underperform more. Reduction in the fraction of managerial share ownership *per se* does not show impact on the observed abnormal return contrary to the prediction of the agency hypothesis that they would show poorer performance. However, issuers in which directors reduces the fraction of ownership more, show more underperformance when the directors owned below median pre-offering shareholding level. When they owned above pre-offering shareholding level, more decrease in the fraction leads to higher abnormal returns. This evidence offers some support to the predictions in Stulz (1988) and Morck, Shleifer and Vishny (1988) that the impact of the changes in managerial shareholding may be dependent on the level of directors' holdings prior to the change.

The remainder of the chapter is organised as follows. Section 7.2 reviews theories relating managerial shareholding and firm performance. Section 7.3 summarises a sample of previous empirical evidence on the relationship between managerial shareholding and firms' performance. Section 7.4 describes the refined sample, the methodology, and restates the hypotheses to be tested. Section 7.5 presents the empirical results. Section 7.6 presents the summary of findings and conclusions.

7.2 Review of Theoretical Literature

Managers of public corporation presumably own shares in their corporation for the underlying ownership rights they confer which include the right of the residual cash flow (ownership), the right of the voting rights (control), or a combination of both (DeAngelo and DeAngelo, 1985). Therefore, when company directors own a significant fraction of the firm's outstanding shares, they tend to perform dual role; first as residual claimants of the firm's earnings, and second as managers, who influence, control and/or take the firms'

operating decisions. Their efforts to create value may be dependent on which of these roles dominate; a basic result of the separation of ownership from control. Such separation leads to agency problems with the related agency costs (Jensen and Meckling, 1976; Ang *et al.*, 2000), information asymmetry problems (Leland and Pyle, 1977), and differences in risk preferences e.g. selecting less risky investment projects (Amihud and Lev, 1981), creating potential conflicts of interests between managers of the firm and its shareholders. This is because both managers and shareholders are assumed to be utility maximisers and in certain conditions, managers may find it fit to make sub-optimal investment and/or operating decisions or to expend corporate resources to maximise their own wealth rather than that of the shareholders.

The agency theory suggests that managerial share ownership in the firm aligns the interests of managers to those of the shareholders (Jensen and Meckling, 1976), and consequently, lessens the deleterious effects of risk aversion by the managers (Welborne and Cry, 1999). The theory, therefore, predicts a positive linear relationship between firm performance and the level of managerial share ownership. It would appear beneficial to shareholders if managers own as high proportion of the firm's shares as possible. For example, Jensen and Meckling (1976) and Ang *et al.* (2000) developed their theory from the zero agency-cost base case where the firm is solely owned by a single owner-manager. The authors point out that the agency problems and their associated agency cost arise when owner-manager owns a fraction rather than 100 percent of the firms as non-managing shareholders battle to monitor the managers (agents). However, in recent years research has show that such strategy has a potential of inducing two conflicting effects on the management's behaviour namely, the convergence and entrenchment effects. These effects lead to the prediction of a non-linear relationship between managerial share ownership and firm performance.

The agency theory suggests that when managers own none or little equity in the firm their interests diverge from those of the shareholders. Because of their low ownership, they are less likely to benefit from the net surplus associated with their efforts. As a result, they tend to consume large corporate resources in the form of perquisites and make sub-optimal investment

and operational decision at the expense of value maximisation without bearing the whole cost. As the fraction of managerial share ownership grows, managers become motivated by the potential increases in the share of the outcome of their efforts (the convergence of interest effect). This alone predicts a positive and linear relationship between managerial share ownership and the firm performance.

However, developments in the theory now suggest that management's ownership does not always have positive effect on corporate performance; neither is the relationship always linear as suggested in the agency theory. As the fraction of ownership increases, managers become entrenched because the increased managerial stake insulates them from the impact of such control factors as market discipline (e.g. managerial labour market (Fama, 1980), the product market (Hart, 1983), and the market for corporate control (Jensen and Ruback, 1983) which would otherwise prevent them from diverging from value maximisation objective.⁷⁶ The entrenchment hypothesis suggests that at relatively higher level of managerial share ownership the relationship between ownership and firm performance becomes negative.

Moreover, as the fraction of managerial ownership increases further, a threshold will be reached above which the goal congruence obtains again and managers behave like owners, taking decisions that maximises the value of shareholders. As a consequence of the interaction between the two hypotheses, a non-linear relation between the performance of firms and managerial

⁷⁶ For example, Fama and Jensen (1983), Morck, Shleifer, and Vishny (1988), McConnell and Servaes (1990) and Peasnell, Pope, and Young (2000) argue that the market for corporate control, competitive pressure in the labour market and product market will force managers with low stakes in the firm to focus on shareholders' value maximisation. Increased stake renders the factors less effective because managers would have acquired control power over decisions aimed against their inefficiency and fear less of personal wealth loss that may arise from job losses or take-overs. That is, it simply becomes hard for outside shareholders to discipline, monitor or dismiss them. For example, Morck, Shleifer and Vishny (1988) and Dahya, Lonie and Power (1998) argue that the higher the percentage of equity owned by the executives of a firm the lower the probability that any of them will be dismissed, irrespective of how poorly they performed (Dahya *et al.*, 1998). Dennis, Denis and Sarin (1997) also point out that the internal monitoring of management activities is likely to suffer. As a result, managers may find it worthwhile to consume perquisites: attractive salaries, expensive holidays, and non-pecuniary benefits such as to invest in petty projects, offering jobs to friends and family members, etc, (Stulz, 1988). The incentive comes from the fact that the value from such consumption may outweigh the loss they suffer from reduced firm value.

ownership is predicted where a positive relationship obtains over the lower and higher levels, whereas a negative relationship obtains over the middle range of managerial share ownership. Stulz (1988) extends this analysis to takeover firms and shows that the value of the firm is positively related to the fraction of the voting rights controlled by management for low values of the fraction and negatively related to the fraction, as the fraction becomes large.

The debate now remains on the range over which each effect is dominant. See, for example Morck *et al.* (1988), McConnell and Servaes (1990), Mudambi and Nicosia (1998); Short and Keasey (1999). Morck *et al.* (1988) provide 5% and 25% as turning points, McConnell and Servaes (1990) provide 50% while, Hermalin and Weisback (1991) provide a much more complex pattern. For the UK non-financial firms Short and Keasey (1999) provide 15.58% (12.99%) and 41.84% (41.99%) using RSE (VAL) measure, and Mudambi and Nicosia provide 11% and 25% for financial firms. These turning points may indicate that the level of managerial share ownership at which managers become entrenched in the UK is relatively higher than it is in the US.

Further debate is based on causality. That is, whether the changes in managerial shareholding cause the changes in performance or the changes in firm performance trigger the variation in managerial shareholding. For example, Kole (1996) provides evidence that suggests that ownership structure in the firm could be determined by its performance, rather than the other way around. Another direction of the debate is found in Cho (1998) who reports evidence that managerial share ownership may not affect firm performance directly but through investment.⁷⁷

⁷⁷ Using cross-section of Fortune 500 manufacturing firms in 1991, Cho (1998), finds a non-monotonic relationship between insider ownership and investment (capital expenditure and R&D expenditure). This finding was in addition to finding a significant relationship between insider ownership and corporate value consistent similar to Morck *et al.* (1988). That is a positive relationship over the range below 7% and above 38% but negative relationship over the 7%-38% range of insider ownership. Cho therefore, argues that insider ownership may be affecting corporate value via investment. Controlling for endogeneity, the author finds that corporate value affects ownership structure and not the reverse. The author, therefore, questions the implicit assumption that ownership structure is exogenously determined.

7.3 Previous Empirical Evidence

The summary of previous empirical evidence is presented in this section in a format that seeks to answer a number of questions. (i) Whether there is a relationship between firm performance and managerial share ownership. (ii) Is the relationship linear or non-linear. (iii) Is the causality from managerial shareholding to firms' performance or the other way around? (iv) How does the relationship fit the event firms.

7.3.1 Managerial share ownership (MSO) and firm performance

There are as mixed views on the theoretical relationship between firm performance and managerial share ownership as there are in the empirical evidence. The first group of articles examine whether the relationship exists. For example, While Jensen and Meckling (1976) predict a positive relationship between firm performance and managerial share ownership, Demsetz (1983) argues that there should not be a relationship. The latter view is empirically supported in Demsetz and Lehn (1985), and Tsetsekos and De Fucco (1990) while the former is supported in Mehran (1995).⁷⁸

Numerous other empirical studies suggest that the relationship is rather curvilinear than linear. See for example, Morck, Shleifer, and Vishny (1988), McConnell and Servaes, 1990; Hermalin and Weisback (1991); for the US, and Mudambi and Nicosia, 1998; and Short and Keasey, 1999; for the UK. Morck, Shleifer, and Vishny (1988) find that in a sample of 371 Fortune 500 firms, the Tobin's Q is positively related to managerial share ownership over the 0 to 5% ownership range and beyond the 25% ownership level, but negative over the 5 to 25% percent range. In addition, the magnitude of the response of performance to given changes in managerial ownership is substantially less beyond the 25% ownership level. The authors contend that their results are consistent with the view that the convergence-of-interests effects are dominant over the 0 to 5

⁷⁸ Demsetz and Lehn (1985) find no relationship between profit rates and various measures of ownership concentration in 511 US companies in 1980. Tsetsekos and De Fucco (1990) find no significant difference in returns on various portfolios arranged by managerial share ownership. Mehran (1995) finds a positive and statistically significant regression coefficient of Tobin's Q and return on assets (ROA) on the managerial share ownership (percentage of shares and stock options outstanding held by CEOs and shares held by immediate family) in 153 randomly selected manufacturing firms.

percent range and above the 25 percent level, while the entrenchment effect is dominant over the 5 and 25 percent ownership range. Hermalin and Weisback (1991) find positive relationship between firm performance and CEO's stock ownership in 134 NYSE stocks in the range of 0-1% and 5-20%; but negative in the ranges of 1-5% and beyond the 20% ownership level. McConnell and Servaes (1990) report a positive relationship within the range of 0% to somewhere between 35-50% and negative relationship beyond 50% in 1173 US firms in 1976 and 1093 firms in 1986. Han and Suk (1998) find a positive relationship between insider ownership and stock returns in a sample of US firms in the period 1988-1992. The square of the level of insider ownership is inversely related to stock returns consistent with the predicted non-linear relationship.

Studies on the UK market report similar results although some differences are there in the turning points. Short and Keasey (1999) find a positive relation between RSE (VAL)⁷⁹ and managerial ownership over the ranges 0-15.58% (0%-12.99%) and beyond 41.84% (41.99%) levels of ownership, but negative relation over the range between the low and high ranges. Mudambi and Nicosia (1998) find positive relationship between control (measured by the Herfindahl Index) and performance⁸⁰ but negative relation between ownership concentration (measured by the Cubin-Leech Index) and performance in 111 firm in the UK financial services sector over the period 1992-1994, suggesting that ownership concentration alone may be an incomplete measure. Secondly, the authors find a positive relationship between firm performance and percentage of directors' equity ownership (sum of the percentage stake owned by beneficiary and non-beneficiary directors of the company) over the 0-11% and above 25% but negative over the range between 11-25% ownership ranges after adjusting for risk and firm size. Keasey, Short

⁷⁹ The authors define the accounting measure of return on shareholders' equity (RSE) as the ratio of profit attributable to shareholders to shareholder's equity and the market measure (VAL) as the ratio between the market value of the firm to book value of equity at the accounting year-end.

⁸⁰ Two measures of performance were used; (i) The actual rate of return defined as the percentage capital appreciation plus the divided yield over the year assuming gross dividends are reinvested in the firm's shares at the end of the month in which they were paid. (ii) The abnormal rate of return, defined as the performance of the firm's shares over the year, relative to the market as a whole; i.e. actual return less market return for the same period.

and Watson (1994) focus on small- and medium-sized companies in the UK, and yet they find that the firm's return on assets increases as director ownership increases up to a maximum at 68.2% of ownership, after which it decreases as director ownership approaches 100% of equity.

In summary, the vast majority of the recent evidence seems to support the non-linear rather than linear relationship between firm performance and managerial share ownership. That is the managerial interests are aligned with those shareholders in the lower and in the higher levels of managerial share ownership but are entrenched in the middle levels. Comparing the level above which managers become entrenched between the 5% ownership reported in the US with the 11% to 15% reported in the UK, the evidence suggests that managers of UK firms become entrenched at a relatively higher level of managerial ownership (Short and Keasey, 1999). The sample analysed in Mudambi and Nicosia (1998) complements that of Short and Keasey (1999) by providing evidence on financial service sector firms excluded in the latter. Moreover, Mudambi and Nicosia attempt to distinguish between the effects of ownership control and ownership concentration, missing in the other studies.

Despite of the disagreement on the turning points, the evidence is consistent with the notion that managers are more likely to make decisions that maximise shareholders value in the lower and higher levels of managerial ownership but do not in the middle levels. At lower levels of managerial share ownership, managers may be motivated by an increase in their share ownership hence make better decisions as their share stake increases, while in over the level beyond 42% they are likely to take a long-term view in decision making just like would the rest of the shareholders. In the middle level managers may feel insulated and fear nothing, hence they find it fit to indulge in value destroying undertakings.

7.3.2 Change in managerial share ownership and firm performance

From the early evidence, it would seem that firms increasing the fraction of shares held by their managers would experience better performance and vice versa. For example, the Jensen and Meckling's (1976) agency theory suggests that firms experiencing a more significant reduction in managerial share

ownership would show poorer performance. However, consistent with the non-linear prediction, Stulz (1988) shows that the value of the firm is positively related to the fraction of the voting rights controlled by management for low values of the fraction and negatively related to the fraction, as the fraction becomes large. Moreover, the author demonstrates that the effect on firm value of the change in the fraction depends on the prior level of ownership. That is, an increase in the fraction owned by management increases the firm value when the prior fraction is low, but decreases firm value when the prior fraction is high.⁸¹

Morck, Shleifer and Vishny (1988) and Palia and Lichtenberg (1999) find evidence in support of this prediction. Morck *et al.* (1988) find that after controlling for industry effects Tobins Q falls with an increase in the fraction of managerial ownership when the fraction is large. Palia and Lichtenberg (1999) find that managerial ownership changes are positively related to changes in productivity. The authors also find a higher sensitivity of changes in managerial ownership to productivity for firms, which experience greater than the median change in managerial ownership. The message that seems to come from the argument above as well as from the evidence highlighted here is that the market evaluates the changes in managerial share ownership in terms of whether, given the prior level, it will closely align managers and shareholders interests or foster misallocation of resources.

7.3.3 Managerial share ownership and event firms' performance

Several other studies extend this empirical literature by providing evidence of the relationship between managerial share ownership and firm performance in firms experiencing various corporate strategic and operating decisions events. Examples of such events include seasoned equity offerings

⁸¹ Supporting this argument, Wruck (1989) also argue that the change in ownership and the resulting levels of ownership are important. For example, a 7% block sale can give a small group of investors veto power in a take-over if it increases their holding from 45% to 52% and the voting is by a simple majority. However, if a sale establishes only 7% voting block its effects on the probability of a take-over is much smaller.

(Wruck, 1989; Field and Mais, 1994; Cai, 1998; Slovin, Sushka, and Lai, 2000), and mergers and acquisitions (Hubbard and Palia, 1995).⁸²

7.3.3.1 Seasoned equity offering (SEOs) announcements

Equity offerings are made when managers perceive the firm's shares to be overvalued. When the offer is announced, the market interprets the announcement as a signal that the issuer's shares are overvalued and consequently adjusts the price downwards. However, the magnitude of the downward price adjustment may vary according to the proportion of the issuer's shares owned by the managers. For example, Muhtaseb and Philippatos (1991) provide evidence that insider ownership of 30% or less mitigates somewhat the negative price reaction in the market during the two-day announcement period for U.S. firms. Managers who own a significant stake in the firm's equity and are aware of the subsequent costs of false signalling would not signal falsely by issuing shares when they are overvalued. Alternatively, the market may associate the high level of managerial share ownership with lower agency cost investors would have to incur in monitoring the firm's management.

Slovin, Sushka and Lai (2000) study the announcement of UK rights issues made in the period 1986-94, comparing the price effects of insured rights announcements between issuers with ownership concentration $< 5\%$ and $\geq 5\%$ and report significant two-day announcement period abnormal returns of -2.90% and 3.68% for the two categories, respectively, with the difference of means test significant at 10%. The authors further disaggregate the above 5% range of managerial share ownership into 5-20%, 20-40% and $\geq 40\%$ groups and

⁸² Hubbard and Palia (1995) is one example of an investigation of managerial share ownership and corporate event other than SEOs. The authors develop a model in which they show that acquirers with low MSO tend to overpay (high bid premium) because of unobservable perquisite consumption, whereas acquires with higher managerial share ownership also tend to overpay because of the private benefits of control. This results in a negative relationship between bid premium and managerial share ownership at lower levels, but positive relationship between them at higher level of managerial share ownership. The authors provide evidence indicating significant relationship between bid premium and the nine-day abnormal returns in 354 US mergers in the period 1985-1991. The authors interpret their results as showing that at low levels of managerial share ownership, the agency costs of equity reduce the returns earned by the acquirer but as managerial share ownership increases managerial interests converge with those of the shareholders, reducing the bid premium. At sufficiently higher level of managerial share ownership, managers enjoy non-assignable private benefits of control, which can lead to overpayments.

compare the price effects across them. The authors find a general evidence of less adverse share price response for firms with more concentrated ownership.

Fields and Mais (1994) investigate 95 common stock issue announcements by firms listed on the NYSE and AMEX during 1980-1986. The authors find a significant decrease in fraction of the issuer's shares owned by managers and that the ratio of abnormal returns to changes in management ownership associated with announcements of public equity issues is significantly negatively related to management ownership concentration.

Using a sample of 128 firms announcing private sale of equity in the US, Wruck (1989) finds that when the level of ownership concentration is low (0% to 5%) or high ($\geq 25\%$), the relation between changes in firm value at announcement and changes in ownership concentration is positive. In the middle range (5% to 25%), however, this relation is negative.

7.3.3.2 Long-run performance following SEOs

The funds raised through equity offerings are mainly used for long-term projects. Apart from the expected value of the intended projects, the firm's management has the long-term obligation to realise the project's objectives. Given the link between management ownership and the firm's performance, it is expected that the post-offering performance would depend, partly, on their post-offering shareholding in the firm. The market is therefore, expected to interpret high levels of managerial ownership as a positive signal of mitigated agency problem. According to Jensen and Meckling (1976), firms experiencing more reduction in managerial ownership would show poorer performance.

Cai (1998) investigates the impact of both post-issue level of, and the change in, managerial ownership from year -1 to year $+1$ around rights offering by Japanese firms. The author disaggregates the issuing firms into quartiles of managerial share ownership level and quartiles of managerial ownership changes and compares the mean buy-and-hold abnormal returns (size and book-to-market adjusted) between the lowest and highest quartiles of managerial ownership level and ownership change. The author finds that post-issue shareholding by corporate directors is 22.6% for the highest group against 0.4% for the lower group. The author argues that since corporate directors have a

much larger stake in the highest ownership quartile, one would expect issuers in the highest ownership quartile to show better performance. The results show, to the contrary, that issuers with the highest directors' ownership underperform as poorly as those with the lowest directors' ownership over 3 years window.

Overall, corporate directors' shareholding falls by an average (median) of -1.9%(-0.3%) following the offering. There is a 0.4% increase in managerial share ownership in the highest ownership quartile and an average decrease of -6.7% in the lowest ownership quartile. However, the degree of underperformance is not related to the changes in directors' ownership. The author concludes that their evidence is against the hypothesis that reduced managerial ownership is responsible for the poorer performance as suggested by the agency theory.

7.4 Data, Methodology and Hypotheses

7.4.1 Data

For each of the rights issue in the sample, managerial ownership data is collected manually from the *London Stock Exchange Official Yearbooks*⁸³. The books record, among other things, the fractions of shares held by both the directors and institutions, compiled using data filed with the London Stock Exchange supplemented with data from annual reports (Peasnell, Pope, and Young, 2000). The Company Act 1985 Part VI mandates the disclosure of ownership information in the companies' annual reports. The books are used as an alternative to the annual reports. Members of the board of directors must disclose their total shareholding regardless of the size.

Only ownership of ordinary shares is considered; employees' pensions, stock options and shares owned by individuals, including former directors who no longer hold official positions after the offering, are excluded. Also excluded are holdings by managers of other classes of equity such as non-voting shares;

⁸³ The London Stock Exchange yearbook is the authoritative source of information available to those involved in any aspect of investment and finance. It contains, each year, comprehensive entries of all companies and securities listed on the London and Dublin Stock exchanges, including those traded on the Alternative Investment Market (AIM).

e.g. deferred shares, preference shares, unit shares, income shares etc. For each issuer, the aggregate percentage of outstanding shares owned by directors is collected at the last financial statements date before and at the first financial statement date after the rights offering announcement date (last reporting date before and the first reporting date after the announcement date in the post-1993 period).⁸⁴

The measure of managerial share ownership refers to holdings by directors, their families or trusts and other corporate investment vehicles controlled by them, for example, where directors are majority shareholders in other companies or trust funds, which have direct ownership stake in the issuing firm; i.e. it does not distinguish between beneficial (direct) or non-beneficial (indirect) ownership.⁸⁵ Other studies, e.g. McConnell and Servaes (1990), define managerial shareholding as ownership by corporate officers and member of the board of directors. The measure of managerial share ownership is limited to holdings by corporate directors only for, as Short and Keasey (1999) pointed out, managerial ownership data in the UK is only available for individuals who legally hold the position of the director of the firm and not for the other officers/managers of the firm. It is also limited to non-zero holdings; i.e. where information on directors holding is not available, rather than generalising as 0% holding, the issue is excluded from the analysis. The change in managerial share ownership is defined as the difference between the aggregate percentage shareholding by corporate directors after the offering and the aggregate percentage shareholding by corporate directors before the offering.

From the total sample of 818 rights issues, 466 issues had at least one record of managerial shareholding around the offering. Further 55 issues had only pre-offering data whereas 45 issues had only post-offering data. These were dropped out leaving a final sample of 366 issues with both pre- and post-

⁸⁴ This approach is closely similar to that used in, for example, Field and Mais (1994) and Kothare (1997), who obtain their ownership data from the last proxy statement before and the first proxy statement after the issuance date.

⁸⁵ Non-beneficial shares are shares that are held by managers on behalf of families, charities, and individuals. Peasnell *et al.* (2000) argue that it is often impossible to determine the voting and control rights of non-beneficial shareholdings in the UK. However, Faccio and Lasfer (1999) point out that, although managers do not benefit from the cash flows associated with their non-beneficial holdings they have the right to vote.

offering data on managerial shareholding. The difference of means test for the difference between average managerial shareholding in issuers with only pre-offering data and average managerial shareholding in issuers with only post-offering data is not statistically significant, implying that dropping these observation from the analysis would not have any significant impact on the results. In 91.3% of the final sample, pre-offering data was reported within one year before whereas in 84.4% of the sample, the post-offering data was reported within one year after the announcement date. Consequently, the pre-offering and post-offering aggregate percentages of managerial share ownership and their changes from the year before to the year after the offering are respectively denoted as MSO_{t-1} , MSO_{t+1} , and $\Delta MSO_{(-1,1)}$.

7.4.2 Methodology

The main objective of this chapter is to investigate whether the mean buy-and-hold abnormal returns following rights issues differ between firms with the highest and lowest post-offering managerial shareholding, and between firms experiencing the largest and the smallest change in ownership following the rights issues. To achieve this, the sample buy-and-hold abnormal returns are segmented into quartiles based on the post-offering level of managerial shareholding (MSO_{t+1}) as well as on the changes from the pre-offering levels ($\Delta MSO_{(-1,1)}$). To explore the argument that the impact of the change in managerial share ownership on firms' performance depends on whether the change sufficiently changes the level of managerial influence or control, the buy-and-hold abnormal returns are segmented into groups conditional to pre-offering level of managerial share ownership (MSO_{t-1}). The change in managerial share ownership ($\Delta MSO_{(-1,1)}$) is calculated as the difference between post-offering level of managerial share ownership (MSO_{t+1}) and pre-offering level of managerial share ownership (MSO_{t-1}). The buy-and-hold returns are calculated on the basis of a strategy of buying the issuer's shares at the end of the offering month and holding them until the earlier of either the firms' delist date or the end of the 1-, 2-, ..., 5-year holding period (anniversary), where a year is 252 trading days. Like in many previous studies, managerial share ownership is assumed to represent both ownership concentration and managerial control; there is no

separation between concentration and the degree of control conferred by these ownership levels.

7.4.3 Hypotheses tested.

Three hypotheses are tested in this chapter. In a rights issue, the new shares are issued to the existing shareholders, leading to a possibility that the level of managerial shareholding may remain unchanged after the issue. Therefore, the first hypothesis tests whether the difference between the post-offering and pre-offering levels of managerial shareholding is different from zero.

H7.1 There is no difference between post-offering and pre-offering percentage levels of managerial share ownership.

Since higher managerial share ownership helps to align the interest of managers to those of the shareholders, one would expect issuers in which highest fraction of shares are owned by managers to show a level of performance different from that of issuers in which directors own small fraction. The second hypothesis, therefore, tests whether the average buy-and-hold abnormal returns on the issuers in the highest managerial share ownership quartile is different from the average buy-and-hold abnormal return on issuers in the lowest managerial share ownership quartile.

H7.2 There is no difference in the average buy-and-hold abnormal returns between equity rights issuers with the highest post-offering levels of managerial share ownership and equity rights issuers with the lowest post-offering levels of managerial share ownership.

The agency hypothesis (Jensen and Meckling, 1976) predicts that issuers experiencing more reductions in the fraction of shares owned by directors would show poorer performance. If the transfer of ownership following new issues is responsible for the long-run underperformance observed in this study, then the degree of underperformance should be dependent on the magnitude of the transfer of ownership. The third hypothesis, therefore, tests whether there is difference in the average buy-and-hold abnormal returns between issuers

experiencing smallest decrease and largest decrease in managerial shareholding.

H7.3 There is no difference in the average buy-and-hold abnormal returns between equity rights issuers experiencing the largest change in managerial share ownership and equity rights issuers experiencing the smallest change in managerial share ownership following the issue.

This hypothesis is then modified to test whether the impact of the changes in managerial share ownership on firm value is dependent on the directors' pre-offering shareholding levels (Stulz, 1988; Wruck, 1989; Palia and Litchenberg, 1999).

H7.4 The impact of the changes in managerial share ownership on the average buy-and-hold abnormal returns following the rights issue does not depend on the pre-offering shareholding levels.

7.5 Results

7.5.1 Descriptive Statistics

Table 7.1 presents descriptive statistics for managerial share ownership around rights issues. In Panel A, corporate directors hold, on average (median), 20.47% (16.34%) of the firms' outstanding shares after the offering, varying from a minimum of 1.32% to a maximum of 89.41%. Before the offering, directors owned, on average (median), 26.27% (20.51%) of their firms' shares, varying from a minimum of 2.09% to a maximum of 79.77%. Figure 7.1 presents the distribution of post-offering levels of managerial shareholding. Only 14% of issuers have post-offering level of directors' holding equal to, or less than, 5% (compared with 48% and 58% holdings reported in Short and Keasey (1999) and Morck *et al.* (1988) respectively). Also 27.87% of issuers have post-offering holding above 25% (compared with 21% and 14% reported in the same studies, respectively). In 22.13% of the issuers, directors hold more than 30% of the shares (compared with 11% and 8% of the sample firms in 1991 and 1995 respectively, reported in Peasnell *et al.* (2000)).

Following the rights issues, directors' shareholdings decreases significantly (at 0.01 level) by -5.81% (-2.45%), on average (median), from one year before to one year after the offering, ranging from a decrease of -61.20% to an increase of 42.72% . Figure 7.2 shows the distribution of the changes in managerial shareholdings. 72.4% of the sample experienced a decrease in directors' shareholdings, with those experiencing a decrease of more than 5% (25%) constituting 42.8% (6.01%) of the total sample. On the other hand, 26.6% experience an increase in managerial shareholding, with those experiencing an increase equal to or more than 5% (25%) constituting only 6.56% (1.37%) of the sample.

Although the sample with managerial share ownership data includes companies as small as £ 0.3million and as big as £4.66 billion, the majority of the issuers are smaller firms. The mean (median) firm size, measured by market capitalisation at the year-end prior to the offering, is £55.4 (£17.20) million, significantly lower than the average (median) capitalisation of £160.8 (£31.9) million and £246.1 (£53.1) million for firms in the total rights issues sample and the sub-sample without directors' shareholdings data, respectively. The correlation between the fraction of directors' holdings (pre- or post-offering) and firm size is negative, but between the change in the fraction and firm size, the correlation is positive. None of coefficients, however, is statistically significant.

When compared to the studies in the UK the sample shows much higher levels of managerial share ownership. See for example, an average of 12.6% over 1988-1992 period for 225 firms in Short and Keasey (1999), 9.39% for 489 firms in 1991 (excluding non-beneficial holdings) in Peasnell *et al.* (2000), 16.74% over the period 1996-1997 for 1650 firms in Faccio and Lasfer (1999) and 9.64% over the period 1992-1994 for 111 financial companies in Mudambi and Nicosia (1998). There is however, a huge difference in the size of the companies in these samples compared to the sample in this study. Except for Short and Keasey (1999), the rest of the samples contain firms with mean market capitalisation of at least 9.65 times bigger than the mean market capitalisation of the firms in this study. This difference was therefore expected because percentage wise, managers hold large stake in small firms and small stakes in large firms (Faccio and Lasfer, 1999).

When compared with other equity offering samples, the average managerial shareholding is smaller than the 27% (18%) for the NASDAQ's 26 rights issues (25 public underwritten offers) over the period 1973-1986 in Kothare (1997) in which the average firm size was \$35.71 million. On the other hand, it is larger than the average of 9.67% for NYSE/AMEX's 95 SEOs in Fields and Mais (1994) over the period 1980-1986 in which the average market capitalisation was \$ 523 million, and 7.6% for 260 Japanese rights issuing firms in Cai (1998).

Similar variations are found in the US general studies. For example, while Denis and Kruse (1999) and Holderness, Kroszner, and Sheehan (1999) find that officers and directors hold on average 20% and 21%, respectively, a level similar to this study, others (Jensen and Warner, 1988, and Morck *et al.*, 1988; Cho, 1998) report an average holding between 10.6% and 12.4% based on Fortune 500 firms.

The average (median) change in managerial shareholdings in this study is much higher than the significant -2.30% and the insignificant mean (median) -1.9% (-0.3%) reported for the US SEOs (Fields and Mais, 1994) and for the Japanese rights issues (Cai, 1998), respectively. The percentage of issuers with decreases in shareholdings by directors is slightly lower than the 76.8% reported Fields and Mais (1994). In contrast to the Cai's (1998) finding, Kothare (1997) finds insignificant 3.28% increase in insider ownership following rights issues announcements on the NASDAQ.

It is clear from our sample that UK rights issues lead to a significant transfer of ownership by corporate directors around the rights offering. The evidence is inconsistent with the notion that since shares are allocated, on *pro rata* basis, to the existing shareholders, rights issues should not lead to a change in ownership. 22.13% of the issues have directors owning above 30% of the outstanding shares. Weston (1979) finds that directors' ownership of 20-30% prohibits a successful hostile takeover bid. Muhtaseb and Phillipatos (1991), based on US publicly underwritten equity offering, show that insider ownership of 30% or less mitigates somewhat the negative stock price reaction. Such evidence indicates that firms in the sample whose managers own more than 30% equity are more likely to suffer from managerial entrenchment.

In Panel B, The sample with managerial shareholding data is disaggregated into quartiles of post-offering fraction of directors' shareholding. The lowest ownership group has mean (median) holding of 4.95% (4.76%), a statistically significant change of -5.02% (-1.31%) and issuers with mean (median) market capitalisation of £69.8 (27.6) million. On the other hand, the highest ownership group has a mean (median) holding of 43.99% (41.71%), a statistically significant change of 3.02% (1.88%) and issuers with mean market capitalisation of £29.54 (12.69) million. Demsetz and Lehn (1985) document an inverse relationship between firm size and managerial shareholding for the US companies. Harris and Raviv (1988) and Stulz (1988) argue that wealth limitations and restrictions on personal borrowing make control of a large fraction of votes in large firms difficult. This literature suggests that issuers with lowest proportion of managerial shareholding would comprise the largest firms. The difference in firm size between smallest and highest managerial share ownership categories is statistically significant at 0.01 level.

Panel C disaggregates the sample with managerial share ownership data in quartiles based on the changes in directors' holding from before to after the offering. The smallest ownership change quartile has a statistically significant mean (median) transfer of -21.16% (-18.05%), a mean (median) post-offering holding of 22.77% (21.66%) and issuers with mean (median) market capitalisation of £28.96 (9.30) million. On the other hand, the largest ownership change quartile has a statistically significant mean (median) ownership transfer of 5.098% (1.4%), a mean (median) post-offering holding of 24.44 (20.2)% and issuers with mean (median) market capitalisation of £37.22 (£15.72) million. The change in directors' holdings in the smallest quartile is statistically and significantly different from the change in directors' holdings in the largest quartile at 0.01 levels. Issuers experiencing the largest decrease in managerial shareholding had the highest average pre-offering shareholding while those with the smallest decrease had among the lowest pre-offering managerial shareholding. This implies that firms that experienced the largest average decrease in managerial shareholding had the highest average pre-offering shareholding, whereas firms that experienced the smallest average decrease in shareholding, had the lowest average pre-offering managerial shareholding.

7.5.2 Managerial share ownership and buy-and-hold abnormal returns

Tables 7.2 to 7.4 present the average buy-and-hold returns, abnormal returns and wealth relatives from buy-and-hold strategies of holding rights issuers from the end of the issuing month to the earlier of either the end of 1-, 3- or 5-year holding period or the delist date. Abnormal returns are measured against non-issuing firms matched by market capitalisation (Table 7.2), market capitalisation and industry (Table 7.3), and market capitalisation and market-to-book value ratio (Table 7.4), respectively.

In Panel A of each table, the sub-sample with managerial share ownership data experience no worse underperformance than that of total rights issues or that of the rest of the issuers in the sample. This implies that basing the analysis on the sub-sample of issuers with managerial share ownership only, does not have impact on the level of underperformance to be explained. In Panel B of each table, the sub-sample with data on managerial share ownership (N=366) is disaggregated into quartiles of post-offering shareholding. The results show no sufficient evidence to support the hypothesis that firms with the highest managerial shareholding perform differently from firms with the lowest managerial shareholding after rights issues. However, issuers in the third quartile, who represent ownership range between 16% and 28%, do not show any significant underperformance, regardless of the benchmark used. In fact, when the size benchmark is used, quartile 3 issuers outperform size-matched non-issuers over the 3- and 5-year holding periods. Furthermore, they perform significantly better than the issuers in each of the other quartiles do over the three-year holding period.

In Panel C of each table, Short and Keasey's (1999) cut-off points are used to re-categorise the sample. The middle group (13%-40%), which includes all quarter 3 issuers (16-28%), do not significantly underperform the benchmarks used. There are also some significant differences between performance of this group and the lower managerial share ownership group, when the size, and size and market-to-book value benchmarks are used but not when the size and industry benchmark is used. In addition to supporting the evidence under the quartile analysis in Panel B of each table, the results for the

issuers with managerial shareholding between 13% and 40%, may also indicate a possible non-linear relationship between firm performance and managerial shareholding as suggested in recent works. However, these issuers do not show evidence of significant underperformance whereas issuers in the lower range as well as those in the higher range show significant underperformance, contrary to the predictions of the entrenchment theories.

7.5.3 Changes in managerial share ownership

7.5.3.1 Changes from year -1 to +1

The agency hypothesis of Jensen and Meckling (1976) suggests that firms experiencing more reduction in managerial share ownership should show poorer performance. If the transfer of ownership following new issues is responsible for the long-run underperformance observed in this study, then the degree of underperformance should be dependent on the magnitude of the transfer of ownership. Table 7.5 disaggregates the sample buy-and-hold abnormal returns into quartiles of changes in directors' holding from year -1 to year +1, where the buy-and-hold abnormal returns are measured against nonissuers matched by size (Panel A), size and industry (Panel B), and size and market-to-book ratio (Panel C). The average decrease in directors' ownership is -21.16% for the smallest change quartile, significantly lower than the average increase of 5.10% for the largest change quartile. The third quartile has the smallest average decrease in managerial share ownership of -0.96%.

Issuers with the largest decrease in directors' holdings do not significantly underperform the benchmarks used, while issuers with the smallest decrease in managerial shareholding (quartile 3) underperform significantly up to over 4 years after the offering. The results are consistent in all the benchmarks used. However, contrary to the prediction of the agency theory, issuers with more reduction in managerial share ownership after the offering performed significantly better than issuers with lower reduction in managerial shareholding did, against the size and size and market-to-book value benchmarks. In Panel C of Table 7.1, the lowest change group had the highest average pre-offering shareholdings of 44%. This result, therefore, may indicate and interpretation of this higher pre-offering proportion of managerial

shareholding as excessive for value maximisation and that a significant decrease would facilitate value creation. The next section examines the impact of the changes in managerial shareholding taking into account the pre-offering levels.

7.5.3.2 Changes conditional to pre-offering level of managerial shareholding

Stulz (1988) argue that the effect on firm value of the change in the fraction depends on the prior level of ownership. An increase in the fraction owned by management increases the firm value when the fraction is low, but decreases firm value when the fraction is high. Morck, Shleifer and Vishny (1988) argue that when the fraction is small, an increase in the fraction brings the interests of management closer to those of shareholders, but when the fraction is large, it makes management more entrenched and less subjected to the discipline of the market control. Wruck (1989) argues that the effect of a change in ownership concentration on firm value depends on the market's assessment of its effects on resource allocation within the firm, and the probability of a take-over. Wruck provides an example that a 7% block sale can give a small group of investors veto power in a take-over if it increases their holding from 45% to 52% and the voting is by a simple majority. However, if a sale establishes only 7% voting block its effects on the probability of a take-over is much smaller. Finally, Palia and Lichtenberg (1999) find that managerial ownership changes are positively related to changes in productivity, and are more sensitive to the changes in productivity for firms who experience greater than the median change in managerial ownership. These studies seem to suggest that the effect of the changes in managerial share ownership on the firms' stock performance will be dependent on the pre-offering level of managerial shareholding.

Tables 7.6 presents average buy-and-hold abnormal returns for 1- to 5-year buy-and-hold strategies, comparing between rights issuers experiencing above median change, and rights issuers experiencing below median change, in managerial shareholding, given that the issuers had either above median pre-offering level (Panel A) or below median pre-offering level (Panel B), of managerial shareholding.

The median change in managerial shareholding is -2.145% and the median pre-offering level of managerial shareholding is 20.51%. In Panel A, when issuers already had above median pre-offering holding, a further increase leads to poorer performance compared to a decrease. The difference of means test is statistically significant over the one- to three-year holding period (size-adjusted), over one-year holding period (size and industry-adjusted) and over the one- to two-year holding period (size and market-to-book ratio adjusted). In Panel B, when issuers already had below median pre-offering holding level, a further increase above median change leads to higher abnormal returns compared to a further decrease in managerial shareholding. The difference of means test is statistically significant over the one- to three-year holding period (size-adjusted), and over the two-year holding period (size and industry adjusted). The test is not statistically significant when the size and market-to-book ratio benchmark is used.

Table 7.7 presents average buy-and-hold abnormal returns for 1- to 5-year buy-and-hold strategies for either issuers who experienced above median change (Panel A) or issuers who experienced below median change (Panel B), comparing between when issuers had above median, and when issuers had below median, pre-offering level of managerial shareholding. The objective is to demonstrate whether the same range of change will have different impact between when the pre-offering level is low and when the pre-offering level is high.

In Panel A, when the issuers experience a change in managerial shareholding higher than the median change, those issuers who already had pre-offering shareholding level above median show more underperformance than issuers who had below median pre-offering level, over one- to four-year holding periods. The difference of means test is statistically significant over the one- to two-year holding period (size adjusted as well as size and market-to-book ratio adjusted). In Panel B, when issuers experience a decrease in managerial shareholding lower than the median change, those issuers who already had pre-offering shareholding above median level show higher abnormal returns than issuers who had pre-offering shareholding below median level. The difference of

means tests is statistically significant over the one- to four-year holding periods irrespective of the benchmark used.

In summary, the evidence in tables 7.6 and 7.7, used together with the results presented in section 7.5.3.1, seems to suggest support for the prediction in , for example, Stulz (1988), that the impact of the changes in directors shareholding on firm value will depend on the size of their holding prior to the offering. It is also consistent with Morck's *et al.* (1988) argument that an increase in managerial shareholding when the holding is low helps align managerial interests with those of shareholders but entrenches managers otherwise. Comparing the results with the prediction of the agency theory (Jensen and Meckling, 1976) that firms experiencing more reduction in managerial share ownership should show poorer performance, Panels B of both Table 7.6 and Table 7.7, show that this is true only when the directors owned below median pre-offering shareholding level. The same Panels also show that when directors owned above pre-offering shareholding level, more decrease in directors' shareholding leads to higher abnormal returns. This result also corroborates the result on Table 7.5 where issuers with the highest decrease, on average, did not show evidence of significant underperformance.

7.6 Summary and Conclusions

This chapter examined whether the post-offering level of corporate director's shareholdings in the UK rights issuing firms and the changes in their shareholdings around the offering can explain the observed long-run underperformance after the issue. Managerial share ownership level is examined because of the role it plays in aligning managerial interests with those of the shareholders. The change in managerial shareholding is also examined because, in addition to reflecting managers' perception of the value potential of the proposed project, it can give veto power to managers that they can block any action aimed against their inefficiency. It can also reduce such power from them pushing them back to alignment level. The previous studies on the relationship between managerial share ownership concentrated on the US, and where UK firms are studied, emphasis is on the general performance using either the Tobin Q or some accounting rates. This chapter, therefore, extends the

empirical evidence literature by providing evidence relating managerial share ownership to firms' performance for the UK firms issuing new equity via rights issues.

In rights issues shares are allocated, on *pro rata* basis to all existing shareholders. After the announcement, shareholders can trade the rights prior to the actual offerings and buy the shares from the market or subscribe to the shares and then trade them at the market if they so wish. The distribution of voting rights may not change by the issue itself; rather it may be that the trading around the offering transfers the ownership. If the transfer of ownership following the issues is indeed responsible for the long-run underperformance, then the degree of underperformance should be dependent on the magnitude of the transfer of ownership.

The results presented in this chapter, show that managerial share ownership decreases significantly from the year before to the year after the issue. Issuers with post-offering directors' shareholding between 16% and 28% do not show evidence of underperformance while the rest of the groups do. This evidence is consistent with the non-linear evidence in previous studies, but contradicts them in the sense that issuers perform better in the range over which, according to the theoretical predictions, they should have underperformed more due to managerial entrenchment. Also contrary to the prediction of the agency theory of Jensen and Meckling (1976), issuers experiencing more reduction in managerial shareholding around the offering performed better than did the issuers experiencing a smaller decrease. The significance of the difference on means test is, however, weak when the size and industry matched firms is used.

Consequently, the chapter considered the possibility that the impact of changes in directors' shareholding may depend on their pre-offering holdings levels. The results showed that issuers in which directors reduces the fraction of ownership more show more underperformance when the directors owned below median pre-offering shareholding level. When they owned above pre-offering shareholding level, more decrease in directors' shareholding leads to higher abnormal returns instead. It can, therefore, be argued that the Jensen and

Meckling's (1976) prediction is supported in this analysis only when the directors' shareholding level before the offering was below the median.

Table 7.1 Descriptive statistics for managerial share ownership (MSO) around UK rights issues

	Sub sample with MSO (N=366)				Sub sample without MSO (N=452)	Total sample (N=818)
	MV _{t-1} ^a	MSO _{t-1}	MSO _{t+1}	Δ MSO _(-1,1) ^b	MV _{t-1} ^a	MV _{t-1} ^a
Panel A. Total sample						
Mean	55.40 *** ^c	26.27	20.47	-5.81 *** ^d	246.1	160.8
Median	17.20	20.51	16.34	-2.45	53.1	31.9
Std. Dev.	254.40	18.79	16.24	11.82	573.1	468.2
Minimum	0.30	2.09	1.32	-61.20	0.8	0.3
Maximum	4656.30	79.77	89.41	42.72	5904.3	5904.3
Correlation (MV _{t-1}) ^e		-0.062 (-1.183)	-0.044 (-0.835)	0.038 (0.731)		
Percentage negative				72.4 ***		
Panel B. Quartile analysis: post-offering shareholding by directors						
Lowest (N=91)	69.80	9.98	4.953	-5.024 ***		
Q2 (N=92)	35.26	18.25	11.81	-6.44 ***		
Q3 (N=92)	87.00	29.89	21.20	-8.69 ***		
Highest (N=91)	29.54	47.01	43.99	-3.02 **		
<i>t</i> -statistics (difference) ^f	2.70	-18.75	-28.08 ***	-1.14		
Panel C. Quartile analysis: Changes in directors' holdings						
Smallest (N=91)	28.96	43.93	22.77	-21.16 ***		
Q2 (N=92)	94.40	25.18	18.93	-6.25 ***		
Q3 (N=92)	60.70	16.76	15.79	-0.96 ***		
Largest (N=91)	37.22	19.34	24.44	5.10 ***		
<i>t</i> -statistics (difference) ^f	-0.75	10.49	-0.67	-18.78 ***		

This table presents descriptive statistics for a sample of 818 UK rights issues. Total sample analysis is presented in Panel A where, columns 2-5 present mean, median, standard deviation, minimum, and maximum values for firm size, level of directors' ownership before and after rights issues and for changes in ownership around the rights issues (issuers with MSO data only). Columns 6 and 7 present values for subsample without MSO data and for the total rights issues sample, respectively. In Panel B, the subsample with MSO data is categorised in quartiles based on post-offering percentage of directors' shareholding (break points are 8.23%, 16.34%, and 27.78%). In Panel C, the sub-sample is categorised in quartiles based on the changes in directors' shareholding before and after rights issues (break points are -11.45%, -2.45%, and 0%).

^a Market capitalisation at the year-end before the rights issue.

^b The percentage equity holding of all directors after the issue (MSO_{t+1}) minus the percentage holding of all directors before the issue (MSO_{t-1}) for each event firm.

^c Significantly different from the market capitalisation of either the subsample without MSO data or the total sample.

^d Significantly different from zero.

^e Coefficient of correlation $r = SS_{1,2} / (SS_1 \cdot SS_2)^{1/2}$ and its t-statistic; $t = r[(n-2)/(1-r^2)]^{1/2}$.

^f Significant differences between the lowest (smallest) and the highest (largest) level (change).

“***”, “**”, and “*” statistically significant at 0.01, 0.05 and 0.10 levels, respectively.

Table 7.2 Long-run stock returns for UK rights issues, categorised by post-offering level of ownership by corporate directors (Size)

	1- Year				3-Year				5-Year					
	N	MSO _{t+1}	Issuers	Non Issuers	ABHARs	WR	Issuers	Non Issuers	ABHARs	WR	Issuers	Non Issuers	ABHARs	WR
Panel A. Rights issues sample														
Total sample	818		7.52	16.22	-8.7 ***	0.93	19.75	44.76	-25.01 ***	0.83	37.87	69.97	-32.1 ***	0.81
With MSO _{t+1} (a)	366	20.47	4.81	16.79	-11.98 ***	0.90	21.68	54.31	-32.62 ***	0.79	55.20	83.60	-28.5 *	0.85
Without MSO _{t+1} (b)	452		9.72	15.76	-6.04 **	0.95	18.19	37.04	-18.85 ***	0.86	23.86	58.90	-35.05 ***	0.78
t-statistics (a/b)					(-1.48)				(-1.36)				(0.36)	
Panel B. Quartile analysis: Post-offering level of directors' holdings ^c														
Lowest (d)	91	4.95	7.99	18.57	-10.58 *	0.91	24.10	68.10	-44.00 **	0.74	57.60	83.80	-26.2	0.86
Q2	92	11.81	2.70	16.03	-13.33 **	0.89	6.14	60.10	-53.90 ***	0.66	17.10	87.50	-70.5 ***	0.62
Q3	92	21.20	7.13	8.96	-1.82 ^f	0.98	46.30	39.55	6.80 ^{fig}	1.05	114.80	82.70	32.1 ^h	1.18
Highest (e)	91	43.99	1.41	23.70	-22.28 ***	0.82	10.10	49.60	-39.50 ***	0.74	30.90	80.40	-49.5 **	0.73
t-statistic (d/e)		(-28.08) ***			(1.42)				(-0.21)				(0.78)	
Panel C. Short and Keasey (1999) turning points														
MSO _{t-1} < 13% (f)	165	7.66	6.15	16.86	-10.71 **	0.91	16.39	65.70	-49.30 ***	0.70	43.00	85.70	-42.70 **	0.77
13% ≤ MSO _{t-1} < 40% (g)	149	23.43	5.24	15.19	-9.95 **	0.91	31.60	43.49	-11.90	0.92	79.80	78.60	1.20	1.01
MSO _{t-1} ≥ 40% (h)	52	52.62	-0.64	21.17	-21.81 ***	0.82	10.00	49.30	-39.30 **	0.74	23.20	91.40	-68.20 **	0.64
t-statistics (f/g)		(-26.85) ***			(-0.11)				(-2.03) **				(-1.22)	
t-statistics (f/h)		(-29.05) ***			(1.25)				(-0.47)				(0.74)	
t-statistic (g/h)		(-18.12) ***			(1.32)				(1.24)				(1.60)	

The table summarises the mean stock returns of post-offering 1-, 3-, and 5-year buy-and-hold strategies for UK rights issuers, categorised by post-offering level of ownership by corporate directors. Panel A represent the analysis of the total sample, while in Panel B, only the sub-sample with data on MSO_{t+1} is presented in quartiles. Panel C uses cuts estimated in Shot and Keasey (1999) for UK firms. Holding period returns are measured from the end of the month of offering. The matching firms are chosen by market capitalisation at the year-end prior to the offering.

^cThe break points are 8.23%, 16.34%, and 27.78% for the quartile groups, respectively.

^fSignificantly different from Q4 at 0.05 level

^{g, h}Significantly different from Q2 at 0.05 and 0.01 levels, respectively

ⁱSignificantly different from Q1 at 0.1 level

****, ***, and ** indicates statistically significant at 0.01, 0.05, and 0.10 level respectively.

Table 7.3 Long-run stock returns for UK rights issues, categorised by post-offering level of ownership by corporate directors (Size and industry)

	N	MSO _{t+1}	1- Year			3-Year			5-Year					
			Issuers	ABHARs	WR	Issuers	ABHARs	WR	Issuers	ABHARs	WR			
Panel A. Rights issues sample														
Total sample	818		7.52	14.66	-7.13 ***	0.94	19.75	47.34	-27.59 ***	0.81	37.87	78.14	-40.27 ***	0.77
With MSO _{t+1} (a)	366	20.47	4.81	11.92	-7.11 **	0.94	21.68	50.88	-29.19 ***	0.81	55.20	91.30	-36.10 **	0.81
Without MSO _{t+1} (b)	452		9.72	16.87	-7.15 ***	0.94	18.19	44.48	-26.29 ***	0.82	23.86	67.47	-43.61 ***	0.74
t-statistics (a/b)					(0.01)				(-0.31)				(0.43)	
Panel B. Quartile analysis: Post-offering level of directors' holdings ^c														
Lowest (d)	91	4.95	7.99	12.88	-4.89	0.96	24.10	51.70	-27.60 **	0.82	57.60	61.61	-4.00	0.98
Q2	92	11.81	2.70	17.19	-14.49 **	0.88	6.14	51.30	-45.20 ***	0.70	17.10	93.00	-75.90 ***	0.61
Q3	92	21.20	7.13	6.94	0.20	1.02	46.30	56.30	-10.00	0.94	114.80	119.50	-4.70	0.98
Highest (e)	91	43.99	1.41	10.68	-9.26 *	0.92	10.10	44.09	-34.00 ***	0.76	30.90	90.80	-59.80 ***	0.69
t-statistic (d/e)		(-28.08) ***			(0.55)				(0.36)				(2.21) **	
Panel C. Short and Keasey (1999) turning points														
MSO _{t-1} < 13% (f)	165	7.66	6.15	16.64	-10.49 **	0.91	16.39	56.52	-40.10 ***	0.74	43.00	81.90	-38.90 **	0.79
13% ≤ MSO _{t-1} < 40% (g)	149	23.43	5.24	7.64	-2.40	0.98	31.60	48.03	-16.40	0.89	79.80	98.20	-18.40	0.91
MSO _{t-1} ≥ 40% (h)	52	52.62	-0.64	9.23	-9.88	0.91	10.00	41.10	-31.10 *	0.78	23.20	101.30	-78.10 ***	0.61
t-statistics (f/g)		(-26.85) ***			(-1.22)				(-1.31)				(-0.55)	
t-statistics (f/h)		(-29.05) ***			(-0.07)				(-0.46)				(1.46)	
t-statistic (g/h)		(-18.12) ***			(0.79)				(0.66)				(1.48)	

The table summarises the mean stock returns of post-offering 1-, 3-, and 5-year buy-and-hold strategies for UK rights issuers, categorised by post-offering level of ownership by corporate directors. Panel A represent the analysis of the total sample, while in Panel B, only the sub-sample with data on MSO_{t+1} is presented in quartiles. Panel c uses cut-off points estimated in Short and Keasey (1999). Holding period returns are measured from the end of the month of offering. The matching firms are chosen by market capitalisation and industry at the year-end prior to the offering.

^cThe break points are 8.23%, 16.34%, and 27.78% for the quartile groups, respectively.

***, **, and * indicates statistically significant at 0.01, 0.05, and 0.10 level respectively.

Table 7.4 Long-run stock returns for UK rights issues, categorised by post-offering level of ownership by corporate directors
(Size and market-to-book ratio)

	1- Year						3- Year						5- Year					
	N	MSO _{t+1}	Issuers	Non Issuers	ABHARs	WR	Issuers	Non Issuers	ABHARs	WR	Issuers	Non Issuers	ABHARs	WR	Issuers	Non Issuers	ABHARs	WR
Panel A. Rights issues sample																		
Total sample	818		7.52	18.16	-10.64 ***	0.91	19.75	46.84	-27.09 ***	0.82	37.87	79.67	-41.80 ***	0.77				
With MSO _{t+1} (a)	366	20.47	4.81	17.73	-12.92 ***	0.89	21.68	52.87	-31.19 ***	0.80	55.20	93.40	-38.20 **	0.80				
Without MSO _{t+1} (b)	452		9.72	18.51	-8.79 ***	0.93	18.19	41.96	-23.77 ***	0.83	23.86	68.57	-44.71 ***	0.73				
t-statistics (a/b)					(-0.95)				(-0.75)				(0.38)					
Panel B. Quartile analysis: Post-offering level of directors' holdings ^c																		
Lowest (d)	91	4.95	7.99	23.14	-15.14 **	0.88	24.10	77.20	-53.10 ***	0.70	57.60	120.20	-62.60 **	0.72				
Q2	92	11.81	2.70	10.96	-8.26	0.93	6.14	41.00	-34.80 **	0.75	17.10	70.00	-53.00 ***	0.69				
Q3	92	21.2	7.13	18.30	-11.17	0.91	46.30	63.30	-17.00	0.90	114.80	113.00	1.80	1.01				
Highest (e)	91	43.99	1.41	18.59	-17.18 ***	0.86	10.10	30.09	-20.00	0.85	30.90	70.30	-39.40 *	0.77				
t-statistic (d/e)		(-28.08) ***			(0.2)				(-1.64)				(-0.67)					
Panel C. Short and Keasey (1999) turning points																		
MSO _{t-1} < 13% (f)	165	7.66	6.15	17.85	-11.71 **	0.90	16.39	61.70	-45.30 ***	0.72	43.00	99.40	-56.40 ***	0.72				
13% ≤ MSO _{t-1} < 40% (g)	149	23.43	5.24	14.54	-9.30	0.92	31.60	45.30	-13.60	0.91	79.80	83.00	-3.20	0.98				
MSO _{t-1} ≥ 40% (h)	52	52.62	-0.64	26.49	-27.13 ***	0.79	10.00	46.60	-36.60 *	0.75	23.20	104.00	-80.80 **	0.60				
t-statistics (f/g)		(-26.85) ***			(-0.30)				(-1.67) *				(-1.49)					
t-statistics (f/h)		(-29.05) ***			(1.47)				(-0.39)				(0.65)					
t-statistic (g/h)		(-18.12) ***			(1.60)				(0.93)				(1.68) *					

The table summarises the mean stock returns of post-offering 1-, 3-, and 5-year buy-and-hold strategies for UK rights issuers, categorised by post-offering level of ownership by corporate directors. Panel A represent the analysis of the total sample, while in Panel B, only the sub-sample with data on MSO_{t+1} is presented in quartiles. Panel C uses cut-points estimated in Short and Keasey (1999). Holding period returns are measured from the end of the month of offering. The matching firms are chosen by market capitalisation and market-to-book value at the year-end prior to the offering.

^cThe break points are 8.23%, 16.34%, and 27.78% for the quartile groups, respectively.

***, **, and * indicates statistically significant at 0.01, 0.05, and 0.10 level respectively.

Table 7.5 Long-run stock returns for UK rights issues categorised by changes in ownership by corporate directors

	N	AMSO _(-1,1)	1-Year			3-Year			5-Year				
			Issuers	ABHARs	WR	Issuers	ABHARs	WR	Issuers	ABHARs	WR		
Panel A: Size matched													
Smallest	91	-21.16 ***	10.77	0.46	1.00	30.30	34.16	-3.90	0.97	35.90	63.40	-27.50	0.83
Q2	92	-6.25 ***	0.95	-9.57 *	0.91	12.40	62.10	-49.70 ***	0.69	49.00	77.90	-28.80	0.84
Q3	92	-0.96 ***	9.95	-20.69 ***	0.84	22.48	76.70	-54.20 ***	0.69	80.30	122.80	-42.60	0.81
Largest	91	5.10 ***	-2.44	-18.05 ***	0.84	21.70	43.98	-22.30	0.85	55.30	70.10	-14.80	0.91
t-statistic ^a		(-13.87) ***		(1.11)				(1.84) *				(0.04)	
t-statistic ^b		(-19.23) ***		(2.14) **				(2.16) **				(0.29)	
t-statistic ^c		(-18.78) ***		(2.12) **				(0.83)				(-0.37)	
Panel B: Size and industry matched													
Smallest	91	-21.16 ***	10.77	-2.44	0.98	30.30	46.20	-16.00	0.89	35.90	94.60	-58.70 **	0.70
Q2	92	-6.25 ***	0.95	-8.37	0.92	12.40	48.50	-36.00 **	0.76	49.00	83.60	-34.60	0.81
Q3	92	-0.96 ***	9.95	-7.74	0.93	22.48	53.30	-30.90 **	0.80	80.30	87.90	-7.70	0.96
Largest	91	5.10 ***	-2.44	-9.87 *	0.91	21.70	55.50	-33.80 **	0.78	55.30	99.20	-43.90 *	0.78
t-statistic ^a		(-13.87) ***		(0.65)				(0.82)				(-0.64)	
t-statistic ^b		(-19.23) ***		(0.55)				(0.62)				(-0.97)	
t-statistic ^c		(-18.78) ***		(0.8)				(0.73)				(-0.38)	
Panel C: Size and market-to-book ratio matched													
Smallest	91	-21.16 ***	10.77	-1.07	0.99	30.30	41.00	-10.80	0.92	35.90	74.10	-38.20 *	0.78
Q2	92	-6.25 ***	0.95	-13.12 *	0.88	12.40	48.30	-35.90 **	0.76	49.00	75.80	-26.70	0.85
Q3	92	-0.96 ***	9.95	-20.45 ***	0.84	22.48	73.90	-51.40 ***	0.70	80.30	137.20	-56.90	0.76
Largest	91	5.10 ***	-2.44	-16.96 ***	0.85	21.70	48.10	-26.40	0.82	55.30	86.10	-30.80	0.83
t-statistics ^a		(-13.87) ***		(1.12)				(1.00)				(-0.35)	
t-statistics ^b		(-19.23) ***		(1.73) *				(1.67) *				(0.36)	
t-statistics ^c		(-18.78) ***		(1.52)				(0.61)				(-0.22)	

The table summarises the mean stock returns of post-offering 1-, 3-, and 5-year buy-and-hold strategies for UK rights issuers, categorised by change (from year-1 to +1) in ownership by corporate directors. Holding period returns are measured from the end of the month of offering. The matching firms are chosen by market capitalisation at the year-end prior to the offering (Panel A), market capitalisation and industry (Panel B) and market capitalisation and market-to-book ratio (Panel C). The breakpoints are -11.45%, -2.45%, and 0%, for the first, second, and third quartile groups of change in shareholding by corporate directors, respectively. The change is defined as the percentage holding after the rights issue minus the percentage holding before the rights issue for each issuer.

^{a, b, c} Smallest change quartile compared to Q2, Q3, and the largest change quartile, respectively.
 "****", "***", and "*" indicates statistically significant at 0.01, 0.05, and 0.10 level respectively.

Table 7.6 The long-run buy-and-hold abnormal returns for UK rights issues, categorised by changes in directors' shareholdings conditional to their pre-offering holdings

		Size					Size and industry					Size and market-to-book ratio						
		Holding period					Holding period					Holding period						
N	AMS _(-1,t)	MSO _{t-1}	1-Year	2-Years	3-Years	4-Years	5-Years	1-Year	2-Year	3-Year	4-Year	5-Year	1-Year	2-Year	3-Year	4-Year	5-Year	
Panel A: Above median pre-offering share holding by directors																		
$\Delta MSO_{(-1,t)} \geq Q2$	51	4.17 ***	39.20	-35.86 ***	-63.84 ***	-60.68 ***	-61.35 **	-11.07	-17.04 **	-29.3 **	-37.55 **	-40.29	-3.49	-36.21 ***	-61.13 ***	-47.18 **	-52.51	-28.06
$\Delta MSO_{(-1,t)} < Q2$	182	-16.43 ***	42.08	2.44	6.63	3.63	-5.33	-4.49	-0.37	-4.78	-11.92	-19.31	-32.33	-1.67	-3.86	-7.96	-11.54	-21.02
		(12.42)	(-1.15)	(-4.19) ***	(-3.92) ***	(-2.92) ***	(-1.635)	(-0.084)	(-1.67) *	(-1.368)	(-1.123)	(-0.564)	(0.387)	(-2.69) ***	(-2.61) ***	(-1.40)	(-1.02)	(-0.08)
Panel B: Below median pre-offering shareholding by directors																		
$\Delta MSO_{(-1,t)} \geq Q2$	132	1.23 ***	9.87	-13.01 **	-22.55 **	-29.72 **	-36.89 **	-35.56	-5.61	-12.27	-30.31 **	-31.33 *	-34.28	-11.95 **	-21.02 **	-35.84 ***	-59.33 ***	-50.09 **
$\Delta MSO_{(-1,t)} < Q2$	51	-6.49 ***	14.89	-22.74 ***	-61.34 ***	-105.88 ***	-98.01 ***	-89.57 ***	-18.5 **	-41.64 ***	-62.65 ***	-73.87 ***	-83.48 ***	-21.25 **	-42.25 ***	-63.28 ***	-65.24 **	-62.06 **
		(12.34)	(-7.69)	(0.98)	(2.21) **	(2.53) **	(1.90) *	(1.527)	(1.443)	(2.23) **	(1.43)	(1.621)	(1.441)	(0.84)	(1.25)	(1.08)	(0.19)	(0.38)

The table summarises the mean stock returns of post-offering 1- to 5-year buy-and-hold strategies for UK rights issuers, conditional to pre-offering level of shareholding by corporate directors. Q2 is the median change in managerial share holding (-2.45%). Panel A compares issuers experiencing above median change with issuers experiencing below median change in shareholdings, given that issuers had above median (20.51%) directors' share holdings before the offering. Panel B does the same but given that issuers had below median directors' share holdings before the offering. The holding period returns are measured from the end of the month of offering, and the change is defined as the percentage holdings after the offering minus the percentage holdings before the offering for each issuer. The matching firms are chosen by market capitalisation, market capitalisation and industry and market-to-book ratio at the year-end prior to the offering.

***, **, and * indicates statistically significant at 0.01, 0.05, and 0.10 level respectively.

Table 7.7 The Long-run mean buy-and-hold abnormal returns for UK rights issues, categorised by directors' pre-offering shareholdings conditional to the median change

		Size					Size and industry					Size and Market-to-book ratio						
		Holding period					Holding period					Holding period						
N	MSO _(t-1)	1-Year	2-Years	3-Years	4-Years	5-Years	1-Year	2-Year	3-Year	4-Year	5-Year	1-Year	2-Year	3-Year	4-Year	5-Year		
Panel A: Above median change in share holding by directors																		
MSO _(t-1) ≥ Q2	51	39.20	4.17 ***	-35.86 ***	-63.84 ***	-60.68 ***	-61.35 ***	-11.07	-17.04 **	-29.30 **	-37.55 **	-40.29	-3.49	-36.21 ***	-61.13 ***	-47.18 **	-52.51	-28.06
MSO _(t-1) < Q2	132	9.87	1.23 ***	-13.01 **	-22.55 **	-29.72 **	-36.89 **	-35.56 *	-5.61	-12.27	-30.31 **	-31.33 *	-34.28	-11.95 **	-21.02 **	-35.84 ***	-59.33 ***	-50.09 **
t-diff		(13.44)	(2.04)	(-2.51) **	(-2.28) **	(-1.39)	(-0.71)	(0.32)	(-1.20)	(-1.11)	(-0.34)	(-0.24)	(0.42)	(-1.97) **	(-1.95) *	(-0.42)	(0.17)	(0.26)
Panel B: Below median change in share holding by directors																		
MSO _(t-1) ≥ Q2	132	42.08	-16.43 ***	2.44	6.63	3.63	-5.33	-4.49	-0.37	-4.78	-11.92	-19.31	-32.33	-1.67	-3.86	-7.96	-11.54	-21.02
MSO _(t-1) < Q2	51	14.89	-6.49 ***	-22.74 ***	-61.34 ***	-105.88 ***	-98.01 ***	-89.57 ***	-18.50 **	-41.64 ***	-62.65 ***	-73.87 ***	-83.48 ***	-21.25 **	-42.25 ***	-63.28 ***	-65.24 **	-62.06 **
t-diff		(19.65)	(-9.59)	(2.53) **	(3.89) ***	(3.66) ***	(2.91) ***	(2.39) **	(1.94) *	(2.29) **	(2.12) **	(2.04) **	(1.44)	(1.68) *	(2.07) **	(2.10) **	(1.75) *	(1.27)

The table summarises the mean stock returns of post-offering 1- to 5-year buy-and-hold strategies for UK rights issuers, categorised by changes in shareholdings by corporate directors. Panel A compares issuers who experienced above median change (median = 2.45%) between those that had above median pre-offering level and those that had below median pre-offering level of managerial shareholding (pre-offering median = 20.51). Panel B does the same for issuers who experienced below median change in managerial shareholding. The holding period returns are measured from the end of the month of offering, and the change is defined as the percentage holdings after the offering minus the percentage holdings before the offering for each issuer. The matching firms are chosen by market capitalisation, market capitalisation and industry and market capitalisation and market-to-book ratio, at the year-end prior to the offering.

***, **, and * indicates statistically significant at 0.01, 0.05, and 0.10 level respectively.

Figure 7.1 Distribution of post-offering level of share ownership by corporate directors

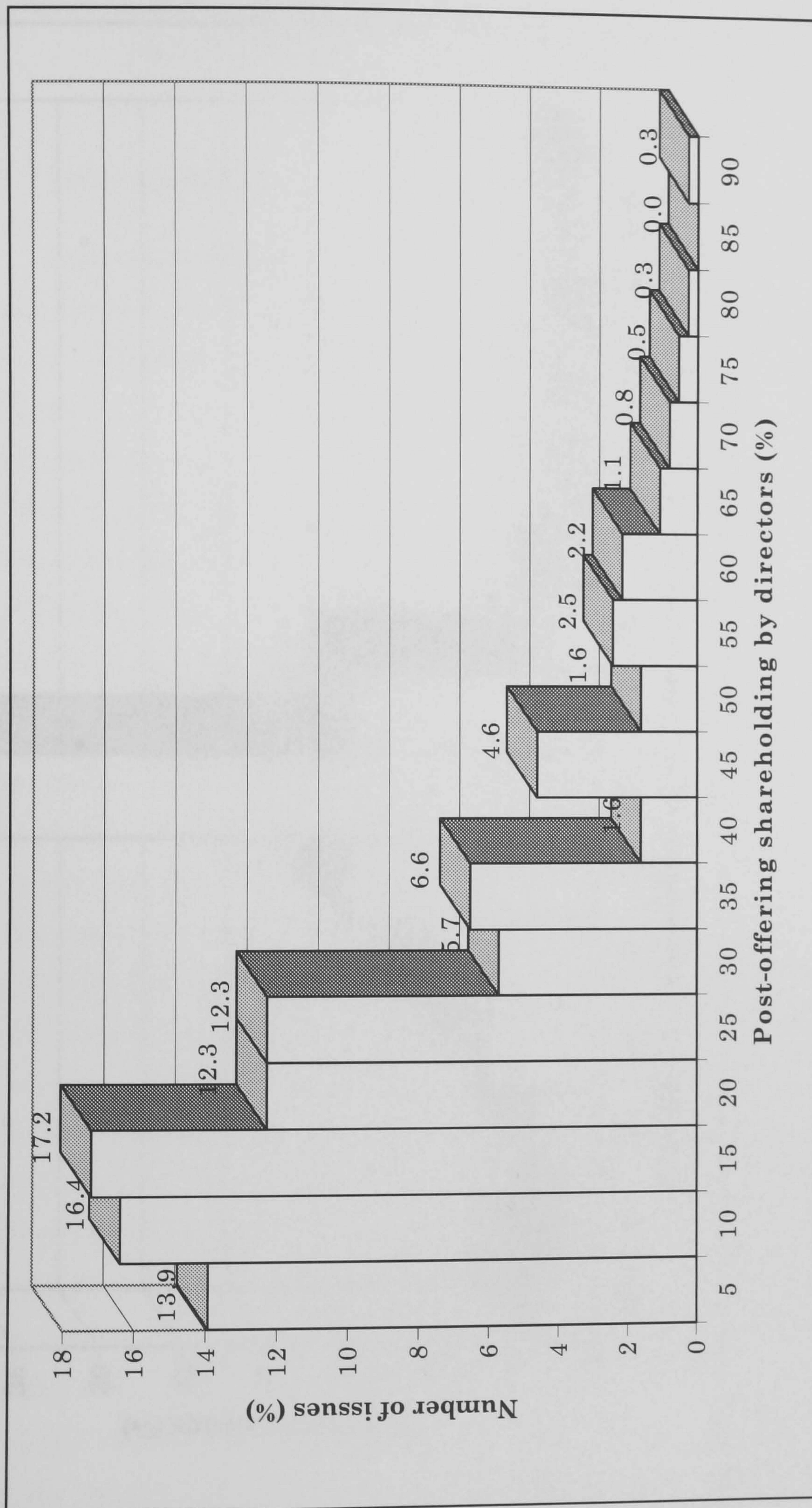
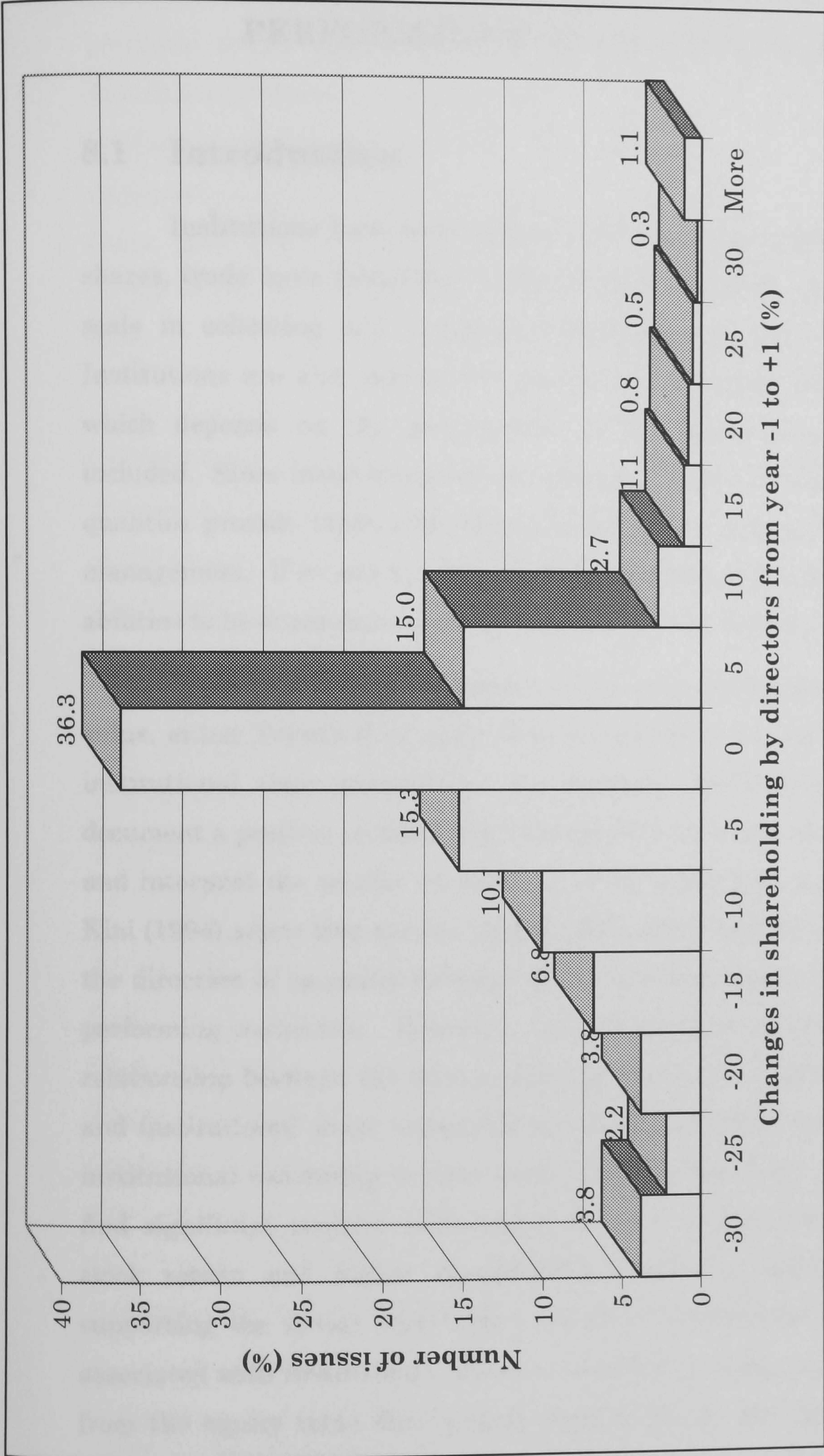


Figure 7.2 Distribution of changes in ownership by corporate directors from before to after rights issues



CHAPTER EIGHT

INSTITUTIONAL SHARE OWNERSHIP AND LONG-RUN PERFORMANCE OF UK RIGHTS ISSUES

8.1 Introduction

Institutions have more money to invest, hold larger stakes in the firms' shares, trade more frequently in shares at the market, and enjoy economies of scale in collecting and analysing information on the companies they hold. Institutions are also expected to provide a reasonable return to their owners, which depends on the performance of the assets they hold, firms' equity included. Since institutions do not manage the firms in which they invest, these qualities provide them with economic incentives and ability to monitor firms' management. If so, one would expect the institutions' monitoring incentives and abilities to be dependent on the proportion of the firm's shares owned by them.

Previous studies have examined the relationship between proxies for firm value, either Tobin's Q or some other measures of accounting profitability, and institutional share ownership. For example, McConnell and Servaes (1990) document a positive relationship between Tobin's Q and institutional ownership, and interpret the results as evidence of monitoring by institutions. Brous and Kini (1994) argue that results such as McConnell and Servaes's may suffer from the direction of causality because of the fact that institutions tend to invest in performing companies. However, the authors argue that finding evidence of a relationship between the firm performance around a specific corporate decision and institutional share ownership would suggest that the causality runs from institutional ownership to firm value, not the other way around. The authors find significant positive relationship between announcement period abnormal stock return and higher institutional ownership, which they interpret as supporting the notion that higher levels of institutional share ownership are associated with institutions' effective monitoring of the use of the cash obtained from the equity issue due to their large stake in the issuing firms. See also Szewczyk, Tsetsekos, and Varma (1992), and Filbeck (1996) discussed later in Section 4.2.

Most of the cash raised through the equity issue is used to finance long-term projects, which in turn, will affect the issuing company's long-term earnings rather than the current year earnings (Brous and Kini, 1994). The proceeds from the equity issue may also avail to the managers more discretionary cash to managers and increases their likelihood of a non-value maximising behaviour (Jensen, 1986). It follows that since institutions' performance depends partly on performance of their investment in the issuing firms, they have greater incentives to protect these investment in the firm's equity by carefully monitoring the use of the proceeds from the equity issue in order to ensure that the capital is used for productive purposes.

This chapter, investigates whether the level of institutional share ownership (ISO) in UK rights issuing firms and its changes around the offering can explain the observed post-offering stock underperformance. If institutional investors can monitor firms' usage of the funds raised through the equity issue the company's long-term earnings should improve, and then given the linkage between earnings and returns, their efforts will affect the long-term stock performance. For example, Cai (1998) argues that if institutions are more informed and therefore effective monitors of firms, then the long-run buy-and-hold abnormal returns should be higher for issuing firms with higher percentage of institutional ownership.

The examination of institutional shareholding in the UK is particularly interesting because it is a market where institutions' involvement is considered significantly higher, and that these institutions enjoy less restrictive environment, than in the US where most of the research effort has been directed (Short and Keasey, 1997, 1999; Faccio and Laisfer, 2000).⁸⁶ Even pension funds, the leading institutional investor in the UK, invest much higher proportion of their resources in company equities. One would therefore expect this UK environment to influence the degree of institutions' involvement in monitoring management, which would in turn enhance their contribution to the value of the

⁸⁶ Elsewhere, Japan for example, (Cai 1998) points out that financial institutions are allowed to take large debts and equity stakes in the same firms and are actively involved in the monitoring of corporate policy. They frequently participate in new equity issues as long-term investors but on the other hand create a much stronger business relationship, which may overcome the expected monitoring benefits.

firm. The position of the UK market in the largest world markets makes an investigation of the relationship equally important. Furthermore, the Cadbury committee (Cadbury, 1992) insists on the responsibilities of institutional investors in bringing about changes in the underperforming firms rather than selling of their shares. The report seems to reflect the general belief of businesses in the UK that institutional shareholders have a role to play in adding value to firms.

The analysis is based on 551 out of the 818 issues for which data on institutional shareholding in the issuers around the offering could be found. The buy-and-hold abnormal return patterns are segmented into quartiles of post-offering levels of institutional share ownership, and quartiles of changes in the level of ownership around the offering. They are also segmented into groups based on changes in institutional shareholding, conditioned to the median pre-offering holding levels to take into account the fact that the impact of the changes in ownership may depend on the pre-offering level of ownership. The objectives are to find out: (i) whether there is a significant change in institutional share ownership following the offering. (ii) whether the post-rights issue buy-and-hold returns are higher in the issuers with highest institutional ownership than in the issuers with the lowest level of ownership. (iii) whether post-rights issue buy-and-hold returns are higher in the issuers experiencing higher changes than in the issuers experiencing lower changes in ownership. (iv) whether the impact of the changes in ownership on performance is affected by the institutions' pre-offering holding levels.

The results show that institutional share ownership averages 35.27% in the rights issuing firms after the offering. This level represents a statistically significant increase of 1.314% from the level before the offering. The highest institutional share ownership group performed significantly better than the lowest ownership group over the 1- to 4-year holding periods against non-issuers matched by size. However, this result is benchmark-sensitive as the difference in abnormal returns between the two groups, is statistically insignificant when the size and industry, and the size and market-to-book ratio non-issuing firms are used. There is no evidence to suggest existence of differences in buy-and-hold abnormal returns between issuers in the largest and in the smallest

quartiles of change in institutional shareholding. However, for issuers who had above median pre-offering level of institutional ownership, a substantial increase in institutional shareholding leads to a significantly higher abnormal return than a non-substantial increase. In addition, a substantial increase in shareholding by institutions leads to a significantly higher abnormal return for issuers who had above median than for issuers who had experienced below median pre-offering level of institutional shareholding. Similarly, these findings are sensitive to benchmarks used. The differences are statistically insignificant when, for example, the size and market-to-book ratio non-issuing firms are used.

The remaining part of the chapter is organised as follows. Section 8.2 provides a summary of institutional ownership in the UK. Sections 8.3 and 8.4 present a summary of theoretical arguments and previous empirical evidence, respectively. A description of data sources, methodology and hypotheses is provided in Section 8.5 while the empirical results are presented in Section 8.6. Section 8.7 provides summary and conclusions to the chapter.

8.2 Institutional Share Ownership (ISO) in the UK Firms

The UK corporate system resembles that of the US in a number of respects (Black and Coffee, 1994). (i) The legal system is similar to that of the US but differs from the rest of the developed markets. (ii) Most of the large corporations in the UK are publicly, not family, owned.⁸⁷ (iii) Both markets have had comparable levels of liquidity over the years now, and; (iv) Both the “City” and the “Street” have a similar array of institutions. Because of these similarities, the UK corporate environment can serve as a good platform for investigating the robustness of the relationship between institutional share ownership and firm performance reported in the US based studies.

⁸⁷ Franks and Mayer (1997) describe the structure of corporate sector in the UK to constitute (i) a large number of small companies that are privately owned by individuals, families, and partners. (ii) a much smaller number of large companies that are quoted or ‘publicly traded’ on the stock market, and owned by a large number of individual shareholders, and (iii) a significant fraction of shares of the quoted companies owned by institutional investors, in particular; pension funds, insurance firms, investment companies, banks, and mutual funds.

Despite such similarities, there are considerable differences between the two corporate systems not only in terms of who is involved in ownership, that is, individuals or institutions, but also in terms of regulations in place. Short and Keasey (1999) summarise the following differences.

Firstly, the ability of external shareholders in the U.S, particularly institutions, to co-ordinate effective corporate governance action is severely constrained by legal and regulatory restrictions, while far fewer restrictions are placed in the U.K. Consequently, it leads to higher costs of participating in active corporate governance and prevent institutions from building significant stakes in individual corporations (Black, 1990; Roe, 1991).⁸⁸ Moreover, the U.S. institutions are deterred from coalition practices. They are required to disclose formation of any shareholding group, formal or informal, owning 5% or more stock as well as to disclose their group's plan with respect to the company. In contrast, U.K. institutions are not faced with such restrictions; they can form informal coalition, and jointly monitor firms to curb managerial excesses, and are under no obligation to disclose this fact to the public.

Secondly, U.K. institutions prefer the private 'behind the scenes' form of intervention. This implies that the degree of intervention by institutional shareholders is greater than publicly reported. Thirdly, the ability of U.S. corporations' boards to adopt take-over defence mechanisms, coupled with the relative lack of power on the part of external shareholders to monitor management, means that the U.S. corporate managements are largely protected from external corporate control mechanisms compared to its counterpart in the U.K.

Short and Keasey (1999) conclude that the level of institutional ownership in U.K. quoted companies is considerably higher than it is in the U.S quoted firms. Because of such differences, U.K. institutions are thought to be more active monitors of corporations than are their U.S counterparts (Blacks

⁸⁸ It has been pointed out in another study, Roe (1990), that the US legislation restricts the amount of equity in which insurance firms can invest; a maximum of 2% of assets can be invested in a single company and a maximum of 20% of assets can be invested in equity (Table 1, p.10). U.S. pension funds also hold smaller domestic equity positions than their U.K. counterparts. A more recent work by Faccio and Lasfer (2000:77) provides an in-depth analysis of the reasons for and the extent of the differences between assets commitment to equities between the US and UK pension funds.

and Coffee, 1994). If institutional shareholders use their incentives and abilities to monitor firms then one would expect an investigation of the relationship between firm performance and institutional shareholding in the UK around equity offers to provide a useful contribution to the our understanding of the post-issue performance.

The Cadbury Committee Report highlights on the responsibilities of institutional investors (Cadbury, 1992). According to this report, institutions should be encouraged to: (i) make greater use of their voting rights and seek contracts with companies at senior executive level; (ii) monitor boards where there is a concentration of power in the hands of chief executives; (iii) seek to promote the influence of non-executive directors and; (iv) bring about changes in the underperforming companies rather than selling their shares. Furthermore, the London Stock Exchange requires all companies registered in the UK to state, after June 1993, whether they are complying with the Committee's Code of Best Practice, and to give reasons for any areas of non-compliances. While the report's recommendations signal the beliefs of the UK businesses that institutional shareholders have an important role to play to bring about better firm value, Facio and Lasfer (2000) summarise some evidence and shortcoming of these requirements, which adds to the debate, as to whether institutional share ownership matters.

Over the years, there has been an increase in shareholding by institutions in the UK and a reduction of individual holdings. Table 1, Panel A of Table 8.1, presents the pattern of institutional share ownership in the UK and two other countries (US and German) for some selected years. The level of private individuals' shareholding in the UK quoted companies dropped from 50% in 1969 to only 19% in 1993 whereas the percentage shareholding by financial institutions increased from 36 to 62 percent during the same period.⁸⁹ In the US, there was a comparatively smaller decline in the role of private individuals' shareholding in companies from 51% in 1991 to 48% in 1993 whereas the percentage shareholding by financial institutions rose only from 28% to 37% during the same period. In 1991, private individuals' shareholding

⁸⁹ There is a slight difference between these figures and those reported in Panel B because in Panel B, some holdings included in these figures are shown independently as 'other personal factor'.

in the UK averaged only 22.3%. Panel B of Table 8.1 shows the trend in the UK over the years to the first half of 1995. Financial institutions' ownership, for example, rose from 30% (1963) to 58.5% (1989), and stabilised thereafter at an average of 61% up to mid 1995, out of which pension funds and insurance companies account for an average of 53.4% and 31.7%, respectively, over the period between 1981 and 1993.

Despite the relatively higher aggregate holdings, no individual institution owns much of a single firm. For example, Buckley, Ross, Westerfield, and Jaffe (1998) show that of the local firms quoted on the stock exchange in the UK, only 16 percent (compared to 79% in France and 85% in Germany as examples), had a single investor with a stake larger than 25 percent. Several reasons have been discussed in the literature for the growing popularity of financial institutions in the UK. These include the highly developed pension and investment industry which invest heavily in UK equities coupled by the lack of regulatory limits on the value of equity assets an institution can hold, unlike in the US. In addition, tax related incentives for pension funds add to the growth.

8.3 Institutional Share Ownership and Firm Performance

Do institutional investors matter? The growing debate in the finance literature on whether institutional share ownership enhances the value of the firm gives way to two opposing schools of thought.

In the first school of thought, it is held that institutional investors create value for the shareholders through effective monitoring of firm management, and they can do so at a lower cost than atomic shareholders. The incentive and ability to do so rest on their characteristics. Specifically, institutions (i) have more funds to invest (ii) hold relatively more stakes in a single firm, (iii) have more resources to allocate towards information gathering and have expertise to analyse the information and therefore they are more informed than other investors, and (iv) trade more frequently at the market.

Because of the size of the stake, owners of large blocks of shares have greater incentives and ability to monitor and promote better governance of

companies (Demsetz, 1983; Shleifer and Vishny, 1986; Agrawal and Mandelker, 1990). Kahn and Winton (1998) add that the extent of intervention is not only a function of the size of the institution's stake, but also a function of the firms' specific factors and institutions' trading profits. A large stake increases the effectiveness, not only of the institutions' monitoring role, but also of the market for corporate control. Rational managers are less likely to adopt value-destroying decisions/strategies in fear of the power institutions have when they own large proportions of equity in the firm. If for example, a take-over is accomplished, managers suffer from both the loss of their firm specific human capital (e.g. salaries, etc.) and the downward revaluation of their general human capital (reputation), making their job mobility less valuable.

Institutional investors are more informed (Michaely and Shaw, 1994: p.281).⁹⁰ As a result, institutions can identify efficient firms in which to invest capital more profitably (Duggal and Millar, 1999), and are more likely to vote more consistently in accordance with their economic interests than the less informed shareholder (Jarrell and Poulsen, 1987). Badrnath, Kale and Noe (1995) add that the past returns on stocks held by informed institutional traders will be positively correlated with the contemporaneous returns on stocks held by non-institutional traders.

Institutions may dominate the trading of the stocks in which they have large active interest, and trades are the means by which information is incorporated into prices. A high trade frequency in a firm's shares reduces information asymmetry between the firm and the market. The value of the firm is likely to fluctuate more to take into account the company's information as well as the institutional investors' sentiments. Managers are, therefore, more likely to improve their performance in fear of the market's interpretation of

⁹⁰ This might be explained by the following; (i) institutions have greater expertise and greater resources to allocate towards gathering and analysing high quality, firm related information (Pound, 1988; Szewczyk, Tsetsekos, and Varma, 1992; Duggal and Millar, 1999), and they also enjoy economies of scale in doing so. (ii) Some of the institutions such as investment companies, commercial banks, and non-bank trusts, develop potential business relationship with the firms they hold. Such relationship may lead to discussions with management on corporate plans and/or performance, which in turn give them access to information unavailable to individuals or other small shareholders. (iii) Institutions tend to follow large firms and large firms command attention of more financial professionals, which in turn leads to large firms producing higher quality information compared to small firms (Ho and Michaely, 1988).

institutions' sentiments that may be embedded in their trades. In addition, the extent of the market price adjustments following corporate events will be related to the level of information asymmetry, which is also related to the level of institutional trading.

In summary, monitoring helps to align managerial interest with those of the shareholders. Under this school of thought, it is predicted that firms' performance will be positively related to the level of institutional shareholding. For SEO firms, the decision to issue shares by firms with high institutional share ownership may be interpreted as a good decision, and that given the institutions' stake and characteristics, monitoring will ensure the objective of the projects for which the new money was raised are met. The performance of such issuers after the offering, therefore, is expected to be better than that of issuers with low institutional ownership.

In the second school of thought, investors are viewed as incapable of monitoring firms' managers due to their passive or myopic investment goals, conflict of interests and legal constraints. Duggal and Millar (1999) argue that institutional investors are passive investors who are more likely to sell all their holdings in poorly performing firms than to expend their resources in monitoring and improving their performance. Institutional investors may also take a myopic view of their investment. For example, guided solely by the short-term goal of outperforming some benchmarks in the current quarter, they will prefer rebalancing their portfolios, shading off underperforming firms and adding the outperforming firms consistent with their short-term goal, to spending resources to turn the non-performing firms around.

Pound (1988) adds that institutional investors are passive voters who may always vote with management, abstain from voting or even sell their shares to avoid voting. In addition, institutions such as insurance companies may currently or potentially in the future have profitable business relations with the firms whose stocks they also own. Such relations coerce them into voting their shares with management, leading to the conflict of interest hypothesis. Institutional investors and managers may also find it mutually and strategically advantageous to cooperate in their decisions, leading to the strategic alignment

hypothesis. In all these cases, both the institutions' power and willingness to monitor management are hampered.

Finally, there may be some legal restrictions barring or restricting the scope of their intervention. For example, Faccio and Lasfer (2000) point out that despite of their large share stakes in the British firms, pension funds are both ineffective monitors, hence ineffective value maximisers. Firstly, their role as value maximisers is limited by their tax-exempt status. For example, pension funds are often criticised for making companies pay high cash dividends, which could instead be used to finance growth opportunities. Secondly, their role as monitors is hampered because they find it easier and cheaper to sell their holdings, probably because of the high levels of liquidity in the market.⁹¹ They have also been accused of not wanting to sit in the board for fear of getting price sensitive information. Furthermore, they are described as suffering from internal agency problems, i.e. agency problems that exists between ultimate beneficiaries of the institutions' funds and the fund managers responsible for the investment of those funds who may act to emphasize short-term profits at the expense of the long-term corporate governance issues.

The discussion in this section tells us at least two things. Firstly, given the two opposing schools of thoughts regarding the role of institutional share ownership, there could be a trade-off effect. The pension funds experience a similar kind of trade-off internally, increasing the possibility that they may have little effect in monitoring. Since they are the major institutional owners in the UK, followed by insurance companies, more questions are raised as to whether the high levels of aggregate institutional share ownership in UK firms matter. Under this view, the post-offering performance would be unrelated to the level of shareholding by institutions. However, the fund managers are under constant pressure to generate good returns for the ultimate beneficiaries, and their performance is largely dependent on the performance of the assets they hold,

⁹¹ Apart from taking into account the impact of the interrelationship between institutions and the market on the firms' performance, the liquidity argument may present a trade-off problem. For instance, Maug (1998) argues that shareholding by institutions makes the market more liquid and high liquidity reduces the large shareholders' incentive to monitor because they can sell their holding easily. In contrast, such liquid markets make corporate monitoring more effective, as it is cheaper and easier to acquire and hold larger stakes, hence making market for corporate control more likely.

equities included. Because such an objective is achievable through either portfolio balancing or intervention, the debate continues.

8.4 Previous Empirical Evidence

8.4.1 Institutional share ownership and firms' performance

The empirical evidence on the relationship between the institutional share ownership and firm performance is mixed and inconclusive. In this discussion, three focus groups of studies are identified. The first group includes studies assessing the relationship between institutional share ownership and some measures of firm performance. McConnell and Servaes (1990, 1995) find the percentage of shares owned by institutions to be positively and significantly, related to Tobin's Q, a result they interpret as being consistent with the effective monitoring hypothesis. Chaganti and Damanpour (1991) find institutional ownership to have significantly positive effect on the firms' rate of return on equity, but not on the other measures of performance such as return on assets, price earning ratio and total stock return. Short and Keasey (1995, cited by Short and Keasey, 1997) find a little influence of institutional holding on corporate performance when considered independently of other ownership interests. Horderness and Sheehan (1988), for example, find no significant differences in both the Q ratios and accounting profit rates, between firms in which a single large shareholder owns 50% or more and matched firms in which no single shareholder owns more than 20%, of the company's outstanding shares.

The second group of research include studies assessing the relationship conditional to corporate events, such as proxy contests, anti-takeover charter amendment proposals, acquisitions and seasoned equity offerings (SEOs). Brous and Kini (1994) suggest that examination of the relationship in association with specific corporate decisions that managers take might help in corroborating the evidence on the direction of the relationship.

Pound (1988), based on proxy contests, finds no evidence to suggest that institutions act as efficient monitors, and argue that the results are consistent with the possibility that either institutions face conflicts of interests or they find

it worthwhile to strategically align themselves with the existing management. Brickley, Lease and Smith (1988) report results, which suggest that institutional investors such as banks and insurance companies are significantly more likely to vote with management on antitakeover amendments than are other institutional shareholders such as college endowments and mutual funds.⁹² In addition, institutional investors and other blockholders vote more actively on antitakeover amendments than nonblockholders, but when the proposal appears to harm shareholders, the opposition by institutions is much greater than that of nonblockholders. Agrawal and Mandelker (1990) find that the shareholders wealth effects of antitakeover charter amendments proposals are positively related to the proportion of equity owned by institutions, even after controlling for firm size and managerial share ownership.

In corporate acquisitions, Duggal and Millar (1999) find no evidence in support of the hypothesis that active institutional investors have better selection or monitoring ability. Other studies look at the institutional ownership effects in firms issuing equity (Szewcsyk *et al.*, 1992; Brous and Kini, 1994; Filbeck, 1996; Slovin *et al.*, 2000; etc). These studies are discussed later in section 8.4.2.

The last groups of studies examine specific institutions. Faccio and Lasfer (2000) analyse the monitoring role of occupational pension funds in the UK. They argue that because of their objectives, structure and overall shareholding, occupational pension funds are likely to have more incentives to monitor companies in which they hold large stakes than other financial institutions. They compare companies in which these funds hold large stakes with a control group of companies listed on the London Stock Exchange, and show that occupational pension funds hold large stakes over long-term periods, mainly in small companies. However, they find that the value added by these funds is negligible and their holdings lead to companies to neither comply with the “Code of Best Practice” nor outperform their industry counterparts. Overall, they interpret their results as suggesting that occupational pension funds are not effective monitors.

⁹² The authors point out that while the former group of institutions can benefit from existing business relationships with management, the latter seldom have other business relations with management.

Karpoff *et al.* (1996) and Wahal (1996) find little evidence of improvements in operating performance of companies that are targets of pension funds proposals. They argue that these results are consistent with the arguments that pension funds are not effective monitors because of the agency problems within the funds. Nesbitt (1994) provides a contrasting result. Focusing on US companies that are targeted for monitoring by the California Public Employees' Retirement Systems (CalPERS), Nesbitt finds that they outperform S&P index by 41% over the subsequent five-year period.

In summary, the evidence in the articles discussed here is inconclusive. Where evidence is found of the relationship between institutional share ownership and firm performance, it is not sustained when different measures of performance or when a different definition of the proxies for effective monitoring is used. There is a consensus, though, that institutions should play a role in improving performance, but this does not rule out the existence of the other factors that may affect institutions' willingness to do so. Although there is heavy involvement of institutions in the UK equities, pension funds constitute more than 50%. However, the evidence that UK pension funds have no impact on the firms' performance seems to predict that institutions may have no impact on post-equity offering performance.

8.4.2 Institutional share ownership and SEO firms' performance

An equity issue decision is one of the important decisions that firms' management take. If institutional investors are effective monitors then, because of the big sums involved, they have a role to play to make sure that the expected benefits from the projects for which the money was raised are achieved.

Jensen (1986) argues that the proceeds from equity issue give managers more discretionary cash, which may increase the likelihood of non-value-maximizing behaviour by them. Such managers' behaviour may explain the negative stock price reaction associated with equity issue announcements. The level of institutional share ownership in the equity-issuing firms is capable of mitigating this adverse reaction for the following reasons. First, either the institutions systematically invest in firms that make more information available or that more information is generated in response of the presence of higher

institutional ownership. This leads to reduced level of information asymmetry in the market, which would in turn, lead to equity issue announcement that carry less adverse information. Secondly, high institutional share ownership in the issuing firms may signal to the market the potential monitoring benefits, which will positively affect the expected returns, and therefore, the market will react to equity issue announcements not as severely as for the cases where issuers have lower levels of institutional share ownership.

A number of previous studies empirically examine the relationship between the institutional share ownership and the market reaction to equity offering announcements. Examples include Szewczyk, Tsetsekos, and Varma (1992), Brous and Kini (1994), and Filberck (1996) for the US, and Slovin, Sushka, and Lai (2000) for the UK. In addition, Brous and Kini (1994) and Cai (1998) examine the relationship in the long-run for US and Japanese equity issuing firms, respectively.

Brous and Kini (1994) ranked US equity issuers by the percentage of shares held by institutional investors and segment the sample into low, medium, and high institutional share ownership groups. They find that the two-day announcement period abnormal returns for the lowest ownership group (-3.61%) was significantly ($p < 0.01$) lower than that for the highest ownership group (-2.12%). Moreover, the WLS regressions indicate that the two-day announcement period abnormal return is statistically positively related to institutional share ownership and statistically negatively related to the price run-up variable, having controlled for the proportion of shares held by corporate insiders, firm size, and the proportion of new shares issued. They therefore, conclude that their finding is consistent with the effective monitoring hypothesis.

Szewczyk *et al.* (1992) find statistically significant negative relationship between the absolute magnitude of share price reaction and the level of pre-offering institutional share ownership in the SEO firms, which they interpret as being consistent with the notion that information acquisition activities reduce pre-announcement information asymmetry between managers and the capital market. Filbeck (1996) finds no relationship between institutional share ownership and share price response to announcements of new common stock

offerings by bank holding companies. However, Filbeck attributes these results to the regulatory environment in which bank regulators serve as a substitute for the institutional investors in providing effective monitoring just as institutional investors do to non-banking companies.

In the UK, Slovin, Sushka, and Lai (2000) compare the two-day announcement day abnormal returns for both insured rights issues and placings; first between issuers with $<5\%$ and issuers with $\geq 5\%$ of shares owned by institutional investors and secondly, between the 20-40% and either $<20\%$ or $>40\%$. The authors find very little variation in excess returns for the insured rights issues, with respect to institutional share ownership in both comparisons. They find more favourable excess returns, for placings offered by firms with institutional ownership between 20% and 40% than for placings offered by, either the firms with institutional ownership below 20% or above 40%. They interpret the result as consistent with the differences between rights issues and placings where in rights issues new shares are offered to existing shareholders on *pro rata* basis and in placings new shares are offered to outside investors.

Cai (1998) examines the impact of institutional share ownership on the performance of Japanese rights issues, by comparing the buy-and-hold abnormal returns between issuers with the highest and lowest institutional share ownership after rights issues. Cai argues that the higher the institutions stake in the issuing firms the more informed the institutions are and such issuers would be expected to perform better.⁹³ On the contrary, Cai's results indicate lower buy-and-hold abnormal return for issuers with higher (mean = 43%) than for issuers with lower (mean = 5.2%) institutional holdings over the three year holding period. However, the difference of means test is not statistically significant. The analysis of the change in institutional share ownership around the offering produces similar conclusion

⁹³ In an earlier study based on US IPOs, Fields (1995) finds that initial public offerings with higher institutional share ownership soon after the offering date, subsequently tend to earn higher long-run returns than those with smaller institutional shareholding, even after controlling for several firm characteristics. However, firms with higher institutional shareholding soon after the offering date do not subsequently appear to underperform significantly a portfolio of seasoned firms matched by size. IPOs with smaller ISO frequently earn less than the risk free rate in the long-run.

Brous and Kini (1994) provide an extension based on earnings forecast revisions to associate long-run performance and institutional share ownership. They argue that, because the cash raised through the equity issue is typically used to finance long-term projects, monitoring by institutions will not affect current year earnings; rather it will affect the long-term earnings. Thus, if the stock price reaction is a result of effective monitoring of the issue proceeds, there should be a positive relationship between analysts' abnormal forecast revisions in five year earnings growth and institutional share ownership. They find a significant positive relation between analysts' abnormal forecast revisions in five-year earnings growth and institutional ownership, which is consistent with their argument.

8.5 Data, Methodology and Hypotheses

8.5.1 Data

For each of the rights issue in the sample, institutional share ownership data for the issuing firms is collected manually from the *London Stock Exchange Official Yearbooks*.⁹⁴ The books contain records of, among other things, the fractions of shares held by both directors and institutions, compiled using data filed with the London Stock Exchange supplemented with data from annual reports (Peasnell, Pope and Young, 2000). The Company Act 1985 Part VI mandates the disclosure of ownership information in the companies' annual reports. The books are used as an alternative to the annual reports. Prior to 1990, the legislation required disclosure of details of external interests other than that of the directors amounting to $\geq 5\%$ of the issued capital. In the post June 1990 period, this limit was reduced to a holding of $\geq 3\%$ of issued capital.⁹⁵ Accordingly, these amounts are referred to as substantial interests.

⁹⁴ The London Stock Exchange yearbooks are the authoritative source of information available to those involved in any aspect of investment and finance. It contains each year, comprehensive entries of all companies and securities listed on the London and Dublin Stock Exchanges, including those traded on the Alternative Investment Market (AIM), as well as those that traded on the defunct Unlisted Security Markets (USM). One basic limitation of this source is that it discloses substantial external interests only.

⁹⁵ The 1989 amendments to the Company Act reduced the level of mandatory disclosure from 5% to 3% interest in the firms' equity capital.

Only ownership of ordinary shares is considered, excluding holders of other classes of shares such as deferred shares, preference shares, unit shares, income shares etc. For each issuer, the aggregate percentage of outstanding shares owned by institutions is collected at the last financial statement date before and at the first financial statement date after the rights announcement date (last reporting date before and the first reporting date after the announcement date in the post-1993 period). This approach is closely similar to that used in some of the previous studies.⁹⁶

The measure of institutional share ownership refers to the aggregate holdings by institutions such as pension funds, insurance companies, banks, investment companies, unit and investment trusts. Also included in the definition are a few non-financial institutions (i.e. corporate owners or holding companies), and a few public sector institutions.⁹⁷

From a total sample of 818 issues, only in 666 issues, issuers had at least one record of institutions' shareholding firm around the offering. Further 34 issues whose issuers had pre-offering data only, and 81 issues whose issuers had

⁹⁶ For example, Kothare (1997) and Fields and Mais (1994) collect this data at the date of the last proxy statement before and the first proxy statement after the offering. Cai (1998) who measures the percentage of shares owned by managers and that owned by institutions immediately after the offering and the change in ownership by each group from year $t = -1$ to year $t = +1$. Other short window studies such as Szewczyk *et al.* (1992), Brous and Kini (1994), and Filbeck (1996) used data at the month immediately before the announcement date.

⁹⁷ Apart from being very few in number, including them will not have any major impact on the results because they tend to provide similar benefits to those provided by the financial institutions. Holding companies captures tax reductions by facilitating inter-company transfers, reducing transaction costs by offering economies of scale or by supplying internal sources of fund (see Banerjee *et al.*, 1997). Also holding companies may hold stakes in a subsidiary or target firm which may be a supplier or customer in order to influence and/or capitalise on the subsidiary's/target's strategic decisions (see Renneboog, 2000). Some other companies were investing in companies operating in the same industry, or in a similar diversified portfolio. Allen and Phillips (2000), show that block ownership might be useful in aligning the incentives of the firms involved in alliances or joint ventures and block equity holdings by corporations could mitigate information asymmetry problems regarding the investment opportunities of the target firms. Large blockholders, individuals, or companies, purchasing corporations may also be able to effectively monitor or influence management, mainly because they will derive greater benefits from their monitoring and they are likely to have more expertise than ordinary shareholders (Byrd *et al.*, 1998). Corporate block owners may possess industry knowledge or operating expertise that is superior to institutional block owners or other block shareholders. Also in most studies of large or blockholders as monitors, no distinction is made between financial and non-financial institutions.

post-offering data only were dropped, leaving 551 issues in the final sample. This action is not expected to have impact on the level of ownership as the test of the difference between mean pre-offering and mean post-offering percentages dropped was not statistically significant. In about 92% of the issues, the pre-offering data was reported within one-year period before the announcement date while in 82% of the issues issuers reported the post-offering data within the one-year period after the announcement date.

Therefore, the pre-offering percentage of institutional share ownership, post-offering percentage of institutional share ownership, and the change in institutional share ownership around the offering are designated as ISO_{t-1} , ISO_{t+1} , and $\Delta ISO_{(-1,1)}$, respectively.

8.5.2 Methodology

The main objective of the chapter is to investigate whether the mean buy-and-hold abnormal returns following rights issues differ with the level of, and changes in, institutions' shareholding. To achieve this objective, the sample buy-and-hold abnormal returns are segmented into quartiles of post-offering levels of, and quartiles of changes from year -1 to year +1, in institutional shareholding. The change in institutional shareholding, $\Delta ISO_{(-1,1)}$, is calculated as difference between post-offering percentages and pre-offering percentages of institutional shareholding. To explore whether the impact of the changes in institutional share ownership depends on the pre-offering level of ownership, the buy-and-hold abnormal returns are segmented into groups based on whether the issuer experienced substantial or small change in institutional shareholding after the issue, conditional to the median pre-offering level of institutional shareholding.

The buy-and-hold returns are calculated based on strategy in which the offered shares are bought at the end of the offering month and are held until the earlier of either the firm's delist date or the end of 1-, 2-, ..., 5-year holding period (anniversary), where a year is 252 trading days. In all cases, the difference of means tests is used to compare mean buy-and-hold abnormal returns between the target groups.

8.5.3 Hypotheses tested.

In rights issues, the rights are distributed to the existing shareholders in proportion to their pre-offering holdings. Kothare (1997) argues that rights issues lead to a more concentrated ownership, and it is even more concentrated after the offering if either management or large block holders take up additional allotment in unsubscribed issues. Take-up in the UK rights issues is usually high (see, for example, Slovin, *et al.*, 2000). As a result, it is uncommon to expect significant change in ownership around rights issues. The first hypothesis, therefore, tests whether there is significant change in institutional share ownership between post and pre-offering shareholding in the study sample.

H8.1 There is no difference between post-offering and pre-offering percentage levels of institutional share ownership.

The second hypothesis tests whether the levels of institutional shareholding after the issue can explain the observed underperformance by comparing the buy-and-hold abnormal returns between issuers with high and issuers with low institutions' shareholding after the offering. If institutions are more informed, have better expertise and resources, and have more to lose should the firm fail, they will have greater incentive to monitor the firm after the issue, which in turn would result in better performance for issuers with higher levels of institutional share ownership. On the other hand, high institutional ownership may not have any impact due to both the passivity and the myopic view of institutional investment strategies as well as the conflict of interests resulting from potentially profitable relations that may exist between them and the firms they hold. This may lead to a neutral impact on the firm value because of the trade-off between the incentives and the willingness to monitor effectively the corporations in which they invest.

H8.2 There is no difference in the average buy-and-hold abnormal returns between equity rights issuers with the highest post-offering levels of institutional share ownership and issuers with the lowest levels of post-offering institutional share ownership.

The third hypothesis tests whether the change in the level of institutional shareholding around the offering can explain the observed underperformance by comparing the buy-and-hold abnormal returns between issuers with smallest change (quartile 1) and issuers with largest change (quartile 4) in shareholding after the issue.

H8.3 There is no difference in the average buy-and-hold abnormal returns between equity rights issuers experiencing the largest change in institutional share ownership and equity rights issuers experiencing the smallest change in institutional share ownership.

To explore the possibility that the impact of changes in shareholding may depend on whether the changes drive institutions closer to, or away from, effective control levels, the buy-and-hold abnormal returns are compared between issuers who experienced substantial and issuers who experienced non-substantial changes conditional to the median pre-offering level of institutional shareholdings.

H8.4 The impact of the changes in institutional share ownership on the average buy-and-hold abnormal returns following the rights issues does not depend on the pre-offering shareholding levels.

8.6 Results

8.6.1 Descriptive statistics

Table 8.2 presents descriptive statistics for institutions' share ownership in firms making rights issues. In Panel A, institutions hold, on average (median) 35.27% (34.21%) of the issuing firms' outstanding shares after the offering, varying from a minimum of 3.03% to a maximum of 88.91%. Before the

offering, institutions owned, on average (median), 33.96% (31.81%) of the issuing firms' shares, varying from a minimum of 3.10% to a maximum of 96.32%. Figure 8.1 presents distribution of post-offering shareholding by institutions around the offering. In majority of the issues, institution owned between 10% and 50%, in aggregate, of the issuing firms' shares. In only 2.5% of the issues institutions owned 5% or less, whereas in approximately 20% of issues institutions owned above 50% of the issuers' equity capital.

Following the offering, institutions' shareholding increased significantly (at 0.01 level) by an average of 1.314% from a year before to a year after the offering, ranging from a decrease of -59.17% to an increase of 54.53%. Elsewhere, Cai (1998) reports insignificant increase for Japanese rights issues while Fields and Mais (1994) report a significant decrease in institutional share ownership of 1.40% around public equity offerings in the US. Figure 8.2 presents the distribution of the changes in institutions' shareholding. In majority of the issues (61.2%) issuers experienced changes in institutions shareholding within the range of -10 and +10%. About 29.04% (35.57%) experienced substantial decreases (increases) (5% or more) in shareholdings by institutions. Overall, 54.8% ($t = 2.25$) of issuers did not experience decreases in institutions' shareholding. It is clear that rights issues in this sample led to a significant increases in institutional shareholding from within a year before to within a year after the offering.

Both the proportions of institutional shareholding (pre- and post-offering) and the changes around the offering are significantly negatively correlated with firm size. The mean (median) issuing firm for issuers with data on institutional shareholding is £155.1 (£34.5) million. This average is not significantly different from either the average sample firm in the total rights issue sample of £160.8 (£31.9) million or the average firms in the sub-sample without institutional shareholding data of £172.4 (£26.4) million.

The reported mean (median) institutional holding seems to be within the range of those reported in most of the previous studies. See, for example, mean (median) holding of 30.40% (28.34%) in Brous and Kini (1994), 31.38% (30.67%) in Filberck (1996), 23.7% (18.4%) in Szewczyk *et al.* (1992) and 18.9% (22.3%) in

Cai (1998), all on seasoned equity offerings.⁹⁸ However, there are a few qualifications. First, the size (market value) of the firms included in this sample is, on average, smaller than the average firms size in any of the studies cited above. Secondly, the definition of institutional ownership is limited to disclosure threshold of 3% or more (5% or more prior to June 1990), which may taint the actual level of ownership in the sample.

In Panel B, based on post-offering proportions of institutional shareholding, the lowest ownership group has mean (median) holding of 12.72% (13.20%), and issuers with mean market capitalisation of £352.9 (£69.9) million. The highest quartile group has a mean (median) holding of 60.11% (58.23%), and issuers with mean market capitalisation of £57.9 (£20.9) million. These findings are consistent with the significant negative correlation reported in Panel A. They are also consistent with the notion that institutions invests more money in big firms because 13% of a company with market capitalisation of £353 million is much bigger than 60% of a company with a market capitalisation of £58 million. A higher value of institutional ownership is expected in larger firms (Raad, Ryan, and Sinkey, 1999) because institutions more conservatively invest in firms with long-established trade record and tend to gravitate towards larger firms in order to maintain fewer firms in their portfolio for cost effectiveness.

In Panel C, based on the change in institutional shareholding from before to after the offering, the smallest quartile group has a statistically significant mean (median) decrease of -17.045% (-13.343%), and issuers with mean (median) market capitalisation of £189.1 (£37.2) million. The largest quartile group has a statistically significant mean (median) ownership increase of 20.216% (17.33%), and issuers with mean (median) market capitalisation of £79.2 (£19.90) million. In both classification cases, the difference of means test for firm sizes, post-offering levels and the degree of ownership changes between the lowest and highest group are statistically significant at 0.01 levels.

⁹⁸ Also 45.97 (45.8%) for bidders and 31.38 (29.75%) for target firms in Duggal and Millar (1999), 33.5 (18.9%) in Agrawal and Mandelker (1990) and 32.9 (33.9%) in Brickley *et al.* (1988) both in firms making antitakeover charter amendment proposals.

8.6.2 Post-offering level of institutional share ownership and buy-and-hold abnormal returns

Tables 8.3 to 8.5 present the average long-run returns, abnormal returns and wealth relatives from buy-and-hold strategies of holding rights issuers from the end of the issuing month until the earlier of either the delist date or the end of 1-, 3-, and 5-year holding periods. The abnormal returns are measured against non-issuing firms matched by market capitalisation (Table 8.3), market capitalisation and industry (Table 8.4) and, market capitalisation and market-to-book value (Table 8.5), at the year-end prior to the offering. In Panel A of each table, the sub-sample with institutional share ownership data experienced no worse underperformance than that of the total rights issues sample, implying that basing the analysis on issuers with data on institutional share ownership only does not have impact on the overall underperformance to be explained.

In Panel B of each table, the sub-sample with institutional share ownership data ($N = 551$) is segmented into quartiles of post-offering shareholdings. The average institutional shareholding in the highest holding group is 60.11% versus 12.72% in the lowest shareholding group. Because of the large stake institutions have in the issuing firms and because of the monitoring characteristics of institutions, issuers in which institutions hold more shares are expected to perform better than issuers in which institutions hold smaller stakes. The highest group performed significantly better than the lowest group over the 1- to 4-year holding periods against non-issuers matched by size. However, this result is sensitive to the benchmark used, as when the size and industry (Table 8.4) and size and market-to-book ratio (Table 8.5) non-issuing firms are used the difference in buy-and-hold abnormal return between the two groups is not statistically significant.

8.6.3 Changes in institutional share ownership and buy-and-hold abnormal returns

The change in institutional shareholding affects stock performance in several ways. For example, an increase in aggregate shareholding by institutions may be interpreted as an increased confidence by institutions, which are capable of identifying valuable firms to invest in. In addition, it may signal higher expected rate of return associated with increased monitoring. It is

therefore expected that issuers who experienced higher increases in institutional shareholding will perform better than those experiencing smaller increases, or rather decreases.

Table 8.6 segments the buy-and-hold abnormal returns into quartiles based on the changes in institutional shareholding around the offering where the buy-and-hold abnormal returns are measured against pre-offering market capitalisation (Panel A), market capitalisation and industry (Panel B) and market capitalisation and market-to-book ratio (Panel C). In both Panels, there is no evidence to suggest that the mere changes in institutional shareholding have any explanatory power to explain the observed underperformance.

The impact of the changes in share ownership may be dependent on the pre-offering ownership levels (Stulz, 1988; Wruck, 1989). Panel A of Table 8.7, compares the buy-and-hold abnormal returns for issuers who had above median pre-offering institutional share ownership, between issuers who experienced substantial and issuers who experienced non-substantial increases in institutional shareholdings following the issue. The results show that issuers with substantial increases in institutional shareholding do not underperform the size and size and industry benchmarks whereas issuers with non-substantial increases significantly underperformed all three benchmarks used. The difference of means test is statistically significant when the size, and size and industry, benchmarks are used but not when the size and market-to-book ratio is used.

Panel B of Table 8.7 investigates whether there are differences in buy-and-hold abnormal returns for issuers with substantial increases in institutional share ownership after the issue between issuers who had above median and issuers who had below median pre-offering institutional shareholding. The results show that substantial increases lead to significantly higher abnormal returns when institutions had above median than when they had below median pre-offering shareholding. Similarly, the result is sensitive to the benchmark used; the difference of means test is not significant when the market capitalisation and market-to-book ratio matched firms are used.

8.6 Summary and Conclusions

This chapter examined whether the level of, and changes in, institutional share ownership in rights issuing firms in the UK may help to explain the observed long-term underperformance. The finance literature presents many arguments about incentives, ability and advantages of institutional shareholders to monitor the firms they hold and hence affecting their value. The literature also outlines some of the reasons that may affect institutions' willingness to do so. Institutional shareholder in the UK hold more shares in companies, enjoy lesser restrictive environment on their investment objectives as well as their monitoring environment. The Cadbury report also signals the belief of UK businesses that institutions have a role to play to improve the value of the firms in which they invest. However, majority of institutional shareholders in the UK are the pension funds, followed by insurance companies. Pension funds are seen as ineffective monitors of firms, possibly because either they suffer from agency problems within themselves or they adopt a short-term view in their investment strategy. Likewise, insurance companies are likely to suffer from conflict of interest.

Most previous studies on the relationship between firm performance and the proportion of shareholding by institutions focus on the Tobin's Q or profitability measures as proxies for firm performance and the proportion of shareholding as a proxy for monitoring. Others consider the impact of institutional shareholders on firms' performance following corporate decisions, e.g., seasoned equity offerings, acquisitions, proxy contest, etc. For the studies that looked at seasoned equity offerings, they focussed on market reaction following the announcement. Brous and Kini (1994) extended this to long-term performance in terms of the impact institutional shareholding has on the five-year earnings forecast revision in US seasoned equity offering firms, and report a significant positive relationship. Cai (1998) on the other hand, compares the buy-and-hold abnormal returns for the Japanese rights issuing firms between issuers with the highest level of, and highest changes in, institutional shareholding, and issuers with the lowest level of, and lowest changes in, institutional shareholding and finds no significant differences between them.

This chapter provided an analysis similar to that of Cai (1998) for the UK rights issuing firms. On average, institutions owned about 35% of the issuers' shares after the offering, 1.3% higher than the level a year before the offering. The buy-and-hold abnormal returns, against the size, and size and industry matched nonissuers are, on average, significantly higher for issuers with the highest than for issuers with the lowest post-offering institutional share ownership. The difference of means test is not statistically significant when the size and market-to-book ratio matched nonissuing firms are used. There is no evidence to suggest that the mere changes around the offering can explain the underperformance. However, when issuers had institutional ownership above median pre-offering level, the average buy-and-hold abnormal returns against the size, and size and industry matched nonissuing firms are significantly higher for issuers with substantial increases than for issuers with non-substantial increases in institutional shareholding around the offering. Concentrating on the issuer experiencing substantial increases in institutional shareholding alone, the average buy-and-hold abnormal returns, against the size, and the size and industry matched nonissuing firms, are significantly higher for issuers who had institutional ownership above, than for issuers who had institutional ownership below, the median pre-offering level. In both cases, the difference of means tests is not statistically significant when the size and market-to-book ratio matched nonissuing firms are used, indicating that the results may also be sensitive to the benchmark used.

Based on these sensitive results, it is hard to arrive at a strong conclusion to suggest that institutional share ownership has explanatory power in explaining the observed underperformance. Firstly, there is a notion that shareholders exercise their control through the rights issuing process, and therefore after the issue, their impact is minimal. Institutions can refuse to partake in a rights issue or disapprove a rights issue if they are convinced that the project for which the money is being sought would reduce the future cash flows of the firm. Alternatively, they may make additional funding available subject to governance changes within the company. It may be argued, therefore, that institutional shareholders are expected to have acted rationally in approving the issue and since most institutions are themselves listed, further

public intervention will have impact on not only the companies' shares but also their own shares. Accordingly, no relationship between institutional shareholdings and post-rights issue performance will be observed, and the variation in the underperformance could be due to factors other than institutional share ownership.

Secondly, Black and Coffee (1994) note that for British institutions, activism is crisis driven, and the so called behind the scene monitoring is viewed by the public as ineffective. The Cadbury Committee felt that it is a good idea that institutions, driven by the stake they hold in the firms, take a centre stage in monitoring management and intervene rather than shed off underperforming shares. However, Faccio and Lasfer (2000) provide evidence that pension funds, the major institutional shareholders in the UK, do not effectively monitor firms. Although in this study, the institutions were not isolated by type, the fact that pension funds have been shown to be ineffective shareholders, and that insurance companies suffer from the conflict of interest, it is highly unlikely that the weak relationship reported here is universal. Finally, the sample used is limited to ownership interest of above 3% (5% in the pre-1990 period). The definition of institutional share ownership used here is also problematic because it aggregates various institutions holding shares of a particular firm, where a single institution may not have substantial ownership. In these cases, effective monitoring would require a coalition of institutions, which may not be practical all the time. A further analysis using either improved techniques or blockholders is recommended.

Table 8.1 The pattern of percentage share ownership in the UK 1963-1995

Panel A: A comparison of ownership for UK, US, and Germany[†]

		Private individuals	Non-financial corporations*	Government institutions**	Financial institutions [§]	Foreign owners
United Kingdom	1969	50	5	3	36	7
	1993	19	2	1	62	16
United States	1991	51	15	—	28	6
	1993	48	9	—	37	6
Germany	1970	29	41	11	11	8
	1993	17	39	3	29	12

Panel B: Percentage distribution of ownership in the UK by sector[†]

	1963	1969	1975	1981	1989	1990	1991	1992	1993	1995
Financial Institutions [§]	30.3	35.9	48.0	57.9	58.5	61.1	60.3	61.0	61.8	62.0
Individuals	54.0	47.4	37.5	28.2	20.6	20.3	19.9	20.4	17.7	18.0
Non-financial Institutions*	5.1	5.4	3.0	5.1	3.8	2.8	3.3	1.8	1.5	2.0
Overseas	7.0	6.6	5.6	3.6	12.8	11.8	12.8	13.1	16.3	16.0
Other personal sector	2.1	2.1	2.3	2.2	2.3	1.9	2.4	1.8	1.6	1.0
Public sector**	1.5	2.6	3.6	3.0	2.0	2.0	1.3	1.8	1.3	1.0

The table presents patterns of institutional share ownership in the UK during the period from 1963 to mid-1995. Panel A compares the percentage of equity owned by institutions in UK listed firms with those of the US and Germany, as of the month of December each year shown/ except for 1995 figures. Panel B shows the pattern in the UK listed firms alone.

[†] Extracted from Buckley, Ross, Westerfield, and Jaffe (1998).

[‡] Figures for 1963-1993 are extracted from Short and Keasey (1997:19; Table 2.1), while those for 1995 are extracted from the London Stock Exchange's *Quality of Market Review*, Summer 1995.

[§] Financial institutions include pension funds, insurance companies, unit trusts, investment trusts, and banks.

*Includes industrial and commercial companies

**includes central and local government, state bank and social security

Note: In Panel A figures for "private individuals" include those in "individuals" and "other personal sector" in Panel B.

Table 8.2 Descriptive statistics for institutional share ownership (ISO) around UK rights issues

	Sub sample with ISO (N=551)				Sub sample without ISO (N=267)	Total sample (N=818)
	MV _{t-1} ^a	ISO _{t-1}	ISO _{t+1}	$\Delta ISO_{(-1,1)}$ ^b	MV _{t-1} ^a	MV _{t-1} ^a
Panel A. Total sample						
Mean	155.10	33.96	35.27	1.31 *** ^c	172.4	160.8
Median	34.50	31.81	34.21	0.60	26.4	31.9
Std. Dev.	406.40	19.13	18.36	15.42	575.9	468.2
Minimum	0.30	3.10	3.03	-59.17	0.8	0.3
Maximum	3716.20	96.32	88.91	54.53	5904.3	5904.3
Correlation (r) ^d (MV _{t-1})		-0.210 *** (-5.028)	-0.285 *** (-6.977)	-0.080 * (-1.869)		
Percentage positive				54.81 **		
Panel B. Quartile analysis: post-offering shareholding by Institutions						
Lowest (N=138)	352.90	19.03	12.72	-6.31 ***		
Q2 (N=138)	125.60	28.54	28.53	-0.01		
Q3 (N=138)	83.40	37.15	39.91	2.760 **		
Highest (N=137)	57.90	51.24	60.11	8.870 ***		
<i>t</i> -statistic (difference) ^e	4.82	-17.34	-48.08 ***	-8.76		
Panel C. Quartile analysis: Changes in Institutions' holdings around rights issues						
Smallest (N=138)	189.10	45.93	28.88	-17.05 ***		
Q2 (N=138)	199.00	34.09	31.94	-2.15 ***		
Q3 (N=138)	152.70	31.44	35.81	4.37 ***		
Largest (N=137)	79.20	24.30	44.52	20.22 ***		
<i>t</i> -statistic (difference) ^e	2.65	10.48	-7.68	-29.07 ***		

This table presents descriptive statistics for a total sample of 818 UK rights issues. The total sample is presented in Panel A where, columns 2-5 present the mean, median, standard deviation, minimum, and maximum values for firm size, level of institutions' share ownership before and after rights issues and for changes in ownership around rights issues. Columns 6-7 present values for the subsample without ISO data and for the total rights issues sample, respectively. In Panel B, the subsample with ISO data is categorised in quartiles based on post-offering percentage of institutional share holding (break points are 21.85%, 34.21%, and 46.72%). In Panel C, the sub-sample is categorised in quartiles based on the changes in institutions' shareholding before and after rights issues (break points are -6.89%, 0.6%, and 9.06%).

^a Market capitalisation at the year-end prior to the rights issue.

^b The percentage equity holding of all institutions after the issue (ISO_{t+1}) minus the percentage holding of all institutions before the issue (ISO_{t-1}) for each event firm.

^c Statistically significantly difference from zero.

^d Coefficient of correlation $r = SS_{1,2} / (SS_1 \cdot SS_2)^{1/2}$ and its *t*-statistic; $t = r[(n-2)/(1-r^2)]^{1/2}$

^e Significant differences between the lowest (smallest) and the highest (largest) level (change)

“***”, “**”, and “*” statistically significant at 0.01, 0.05 and 0.10 levels, respectively.

Table 8.3 Long-run returns for UK rights issues, categorised by post-offering level of ownership by institutions (Size)

	N	ISO _{t+1}	1 - Year			3 - Year			5 - Year					
			Issuers	Non issuers	ABHARs	WR	Issuers	Non issuers	ABHARs	WR	Issuers	Non issuers	ABHARs	WR
Panel A. Rights issues sample														
Total sample	818		7.52	16.22	-8.70 ***	0.93	19.75	44.76	-25.01 ***	0.83	37.87	69.97	-32.10 ***	0.81
With ISO data (a)	551	35.27	4.48	14.45	-9.98 ***	0.91	24.92	47.11	-22.19 ***	0.85	53.29	77.44	-24.20 **	0.86
Without ISO data (b)	267		13.81	19.87	-6.06 *	0.95	9.10	39.92	-30.82 ***	0.78	6.05	54.60	-48.50 ***	0.69
t-statistics (a/b)					(-0.97)				(0.98)				(1.55)	
Panel B. Quartile analysis: Post-offering level of institutions' holdings^c														
Lowest (d)	138	12.72	7.35	30.15	-22.80 ***	0.82	19.02	77.70	-58.70 ***	0.67	67.50	117.90	-50.40	0.77
Q2	138	28.53	5.38	10.25	-4.87	0.96	25.08	44.87	-19.80 *	0.86	50.80	69.70	-18.90	0.89
Q3	138	39.91	2.51	9.15	-6.64	0.94	25.60	36.60	-11.00	0.92	39.20	60.34	-21.10	0.87
Highest (e)	137	60.11	2.66	8.22	-5.56	0.95	30.00	29.15	0.90	1.01	55.60	61.70	-6.10	0.96
t-statistics (d/e))					(-2.43) **				(-3.06) ***				(-1.09)	

The table summarises the mean stock returns of post-offering 1-, 3-, and 5-year buy-and-hold strategies for UK rights issuers, categorised by post-offering level of ownership by institutions. Panel A represent the analysis of the total sample, while in Panel B, only the sub-sample with data on ISO is presented in quartiles. Holding period returns are measured from the end of the month of offering. The matching firms are chosen by market capitalisation at the year-end prior to the offering.

^cThe break points are 18.65%, 31.81%, and 45.77%, for the first to third quartile groups, respectively.

***, **, and * indicates statistically significant at 0.01, 0.05, and 0.10 level respectively.

Table 8.4 Long-run returns for UK rights issues, categorised by post-offering level of ownership by institutions (Size and Industry)

	N	1-Year				3-Year				5-Year				
		ISO _{t+1}	Issuers	Non issuers	ABHARs	WR	Issuers	Non issuers	ABHARs	WR	Issuers	Non issuers	ABHARs	WR
Panel A. Rights issues sample														
Total sample	818		7.52	14.66	-7.13 ***	0.94	19.75	47.34	-27.59 ***	0.81	37.87	78.14	-40.27 ***	0.77
With ISO data (a)	551	35.27	4.48	11.65	-7.18 ***	0.94	24.92	49.03	-24.12 ***	0.84	53.29	87.88	-34.6 ***	0.82
Without ISO data (b)	267		13.81	20.85	-7.04 **	0.94	9.10	43.86	-34.76 ***	0.76	6.05	58.02	-51.97 ***	0.67
t-statistics (a/b)					(-0.03)				(1.29)				(1.2)	
Panel B. Quartile analysis: Post-offering level of insitutions' holdings^c														
Lowest (d)	138	12.72	7.35	17.34	-9.99 **	0.91	19.02	49.39	-30.37 ***	0.80	67.50	91.10	-23.6	0.88
Q2	138	28.53	5.38	7.28	-1.90	0.98	25.08	52.02	-26.9 **	0.82	50.80	82.90	-32.1 *	0.82
Q3	138	39.91	2.51	10.02	-7.51	0.93	25.60	49.30	-23.7 *	0.84	39.20	97.40	-58.2 ***	0.71
Highest (e)	137	60.11	2.66	11.97	-9.32 *	0.92	30.00	45.40	-15.30	0.89	55.60	80.00	-24.40	0.86
t-statistics (d/e))		(-48.08) ***			(-0.1)				(-0.96)				(0.02)	

The table summarises the mean stock returns of post-offering 1-, 3-, and 5-year buy-and-hold strategies for UK rights issuers, categorised by post-offering level of ownership by institutions. Panel A represent the analysis of the total sample, while in Panel B, only the sub-sample with data on ISO is presented in quartiles. Holding period returns are measured from the end of the month of offering. The matching firms are chosen by market capitalisation and industry at the year-end prior to the offering.

^c The break points are 18.65%, 31.81%, and 45.77%, for the first to third quartile groups, respectively.

***, **, and * indicates statistically significant at 0.01, 0.05, and 0.10 level respectively.

Table 8.5 Long-run returns for UK rights issues, categorised by post-offering level of ownership by institutions (Size and Market-to-book ratio)

	N	ISO _{t+1}	1 - Year				3 - Year				5 - Year			
			Issuers	Non issuers	ABHARs	WR	Issuers	Non issuers	ABHARs	WR	Issuers	Non issuers	ABHARs	WR
Panel A. Rights issues sample														
Total sample	818		7.52	18.16	-10.64 ***	0.91	19.75	46.84	-27.09 ***	0.82	37.87	79.67	-41.80 ***	0.77
With ISO data (a)	551	35.27	4.48	15.07	-10.59 ***	0.91	24.92	50.55	-25.63 ***	0.83	53.29	94.31	-41.00 ***	0.79
Without ISO data (b)	267		13.81	24.54	-10.74 ***	0.91	9.10	39.20	-30.09 ***	0.78	6.05	49.45	-43.40 ***	0.71
t-statistics (a/b)					(0.03)				(0.49)				(0.18)	
Panel B. Quartile analysis: Post-offering level of institutions' holdings^c														
Lowest (d)	138	12.72	7.35	19.00	-11.65 **	0.90	19.02	42.74	-23.72 ***	0.83	67.50	78.00	-10.50	0.94
Q2	138	28.53	5.38	10.55	-5.17	0.95	25.08	52.13	-27.10 **	0.82	50.80	83.70	-32.90 *	0.82
Q3	138	39.91	2.51	16.30	-13.80 **	0.88	25.60	58.69	-33.10 **	0.79	39.20	120.00	-80.80 ***	0.63
Highest (e)	137	60.11	2.66	14.43	-11.77 **	0.90	30.00	48.61	-18.60	0.87	55.60	95.50	-39.90 **	0.80
t-statistics (d/e)					(-48.08, ***)				(-0.33)				(0.83)	

The table summarises the mean stock returns of post-offering 1-, 3-, and 5-year buy-and-hold strategies for UK rights issuers, categorised by post-offering level of ownership by institutions. Panel A represent the analysis of the total sample, while in Panel B, only the sub-sample with data on ISO is presented in quartiles. Holding period returns are measured from the end of the month of offering. The matching firms are chosen by market capitalisation and market-to-book value at the year-end prior to the offering.

^cThe break points are 18.65%, 31.81%, and 45.77%, for the first to third quartile groups, respectively.

***, **, and * indicates statistically significant at 0.01, 0.05, and 0.10 level respectively.

Table 8.6 Long-run returns for UK rights issues, categorised by changes in ownership by institutions

	1 - Year										3 - Year										5 - Year									
	Non					Non					Non					Non														
	N	ISO _{t+1}	Issuers issuers	ABHARs	WR	Issuers issuers	ABHARs	WR	Issuers issuers	ABHARs	WR	Issuers issuers	ABHARs	WR	Issuers issuers	ABHARs	WR	Issuers issuers	ABHARs	WR										
Panel A: Size-matched																														
Q1	138	-17.045 ***	12.56	19.90	0.94	28.40	58.50	-30.10 **	0.81	70.10	99.70	-29.60	0.85																	
Q2	138	-2.149 ***	4.87	18.49	0.89	29.81	40.80	-11.00	0.92	58.40	64.70	-6.30	0.96																	
Q3	138	4.373 ***	4.17	15.81	0.90	30.10	57.44	-27.40 *	0.83	62.50	96.00	-33.40 *	0.83																	
Q4	137	20.216 ***	-3.76	3.54	0.93	11.27	31.55	-20.30 *	0.85	21.80	49.11	-27.30 **	0.82																	
Q1 vs Q4		(-29.07) ***			(-0.01)			(-0.52)				(-0.06)																		
Panel B: Size and industry-matched																														
Q1	138	-17.05 ***	12.56	14.96	0.98	28.40	52.88	-24.50 **	0.84	70.10	85.10	-15.00	0.92																	
Q2	138	-2.15 ***	4.87	10.07	0.95	29.81	46.58	-16.77 *	0.89	58.40	84.30	-25.90	0.86																	
Q3	138	4.37 ***	4.17	18.40	0.88	30.10	61.71	-31.60 **	0.80	62.50	107.20	-44.70 **	0.78																	
Q4	137	20.22 ***	-3.76	3.12	0.93	11.27	34.86	-23.60 **	0.83	21.80	74.80	-53.00 ***	0.70																	
Q1 vs Q4		(-29.07) ***			(0.69)			(-0.06)				(1.1)																		
Panel C: Size and market-to-book ratio-matched																														
Q1	138	-17.05 ***	12.56	19.88	0.94	28.40	59.22	-30.80 ***	0.81	70.10	106.40	-36.30	0.82																	
Q2	138	-2.15 ***	4.87	9.77	0.96	29.81	34.91	-5.10	0.96	58.40	65.50	-7.10	0.96																	
Q3	138	4.37 ***	4.17	21.86	0.85	30.10	66.27	-36.20 **	0.78	62.50	116.40	-53.80 **	0.75																	
Q4	137	20.22 ***	-3.76	8.73	0.89	11.27	41.70	-30.50 **	0.79	21.80	88.80	-67.00 ***	0.65																	
Q1 vs Q4		(-29.07) ***			(0.73)			(-0.02)				(0.87)																		

The table summarises the mean stock returns of post-offering 1-, 3-, and 5-year buy-and-hold strategies for UK rights issues, categorised by change (from year -1 to + year +1) in ownership by institutions. In each Panel, the sub-sample with data on ISO is disaggregate into quartiles of institutional share ownership, where, the break points are -6.89%, 0.6%, and 9.061% for the first, second, and third quartile, respectively. Holding period returns are measured from the end of the month of offering. The matching firms are chosen by market capitalisation (Panel A), market capitalisation and industry (Panel B) and market capitalisation and market-to-book ratio (Panel C), at the year-end prior to the offering. "***", "**", and "*" indicates statistically significant at 0.01, 0.05, and 0.10 level respectively.

Table 8.7 Long-run returns for UK rights issues categorised by changes in ownership by institutions conditional to pre-offering level of institutions' shareholding

	N	$\Delta ISO_{(t-1)}$	Size matched					Size and industry matched					Size and market-to-book ratio matched				
			Holding Periods					Holding Period					Holding Period				
			1-Year	2-Year	3-Year	4-Year	5-Year	1-Year	2-Year	3-Year	4-Year	5-Year	1-Year	2-Year	3-Year	4-Year	5-Year
Panel A: Substantial versus non-substantial increases conditional to above median pre-offering shareholding by Institutions																	
$\Delta ISO_{(t-1)} \geq 5\%$	63	13.14 ***	-2.50	12.17	19.86	26.06	5.99	-8.63	-7.00	10.45	26.93	1.99	-14.36 *	-17.88	-19.50	-29.00	-64.11 **
$0\% \leq \Delta ISO_{(t-1)} < 5\%$	47	1.61 ***	-16.10 ***	-26.90 ***	-35.70 ***	-52.40 **	-17.60 ***	-36.10 ***	-60.70 ***	-74.80 ***	-68.10 ***	-0.14	-0.14	-29.10 **	-40.00 **	-45.20 **	-55.60 **
		(9.3) ***	(1.60)	(2.43) **	(2.25) **	(1.65)	(0.93)	(1.53)	(2.50) **	(2.87) ***	(1.83) *	(-0.01)	(0.53)	(0.69)	(0.39)	(0.39)	(-0.22)
Panel B: Comparison of substantial changes between issuers with above and below median pre-offering shareholding by institutions																	
$ISO_{(t-1)} \geq Q2$	63	13.14 ***	-2.50	12.17	19.86	26.06	5.99	-8.63	-7.00	10.45	26.93	1.99	-14.36 *	-17.88	-19.50	-29.00	-64.11 **
$ISO_{(t-1)} < Q2$	133	17.71 ***	-15.20 ***	-38.60 ***	-48.50 ***	-57.80 ***	-49.70 ***	-9.60 ***	-28.30 ***	-37.90 ***	-51.10 ***	-59.30 ***	-13.70 ***	-32.10 ***	-40.10 ***	-56.60 ***	-61.00 ***
		(-2.95) ***	(1.74) *	(3.34) ***	(2.81) ***	(2.39) **	(1.681) *	(0.13)	(1.32)	(2.25) **	(2.81) ***	(1.77) *	(-0.08)	(0.84)	(0.78)	(0.75)	(-0.10)

The table summarises the mean stock returns of post-offering 1- to 5-year buy-and-hold strategies for UK rights issuers, conditional to pre-offering level of shareholding by institutions ($Q2 = 31.81\%$). Panel A compares issuers with substantial to non-substantial changes in shareholdings, given that issuers had above median institutions' shareholding before the offering. Panel B compares buy-and-hold abnormal returns for issuers with substantial increases in institutional shareholding after the issues, between issuers who had above and issuers who had below median pre-offering level of shareholding by institutions. The holding period returns are measured from the end of the month of offering, and the change is defined as the percentage holdings after the offering minus the percentage holdings before the offering for each issuer. The matching firms are chosen by market capitalisation, market capitalisation and industry, and market capitalisation and market-to-book ratio at the year-end prior to the offering.

***, **, and * indicates statistically significant at 0.01, 0.05, and 0.10 level respectively.

Figure 8.1 Distribution of post-offering shareholding by institutions

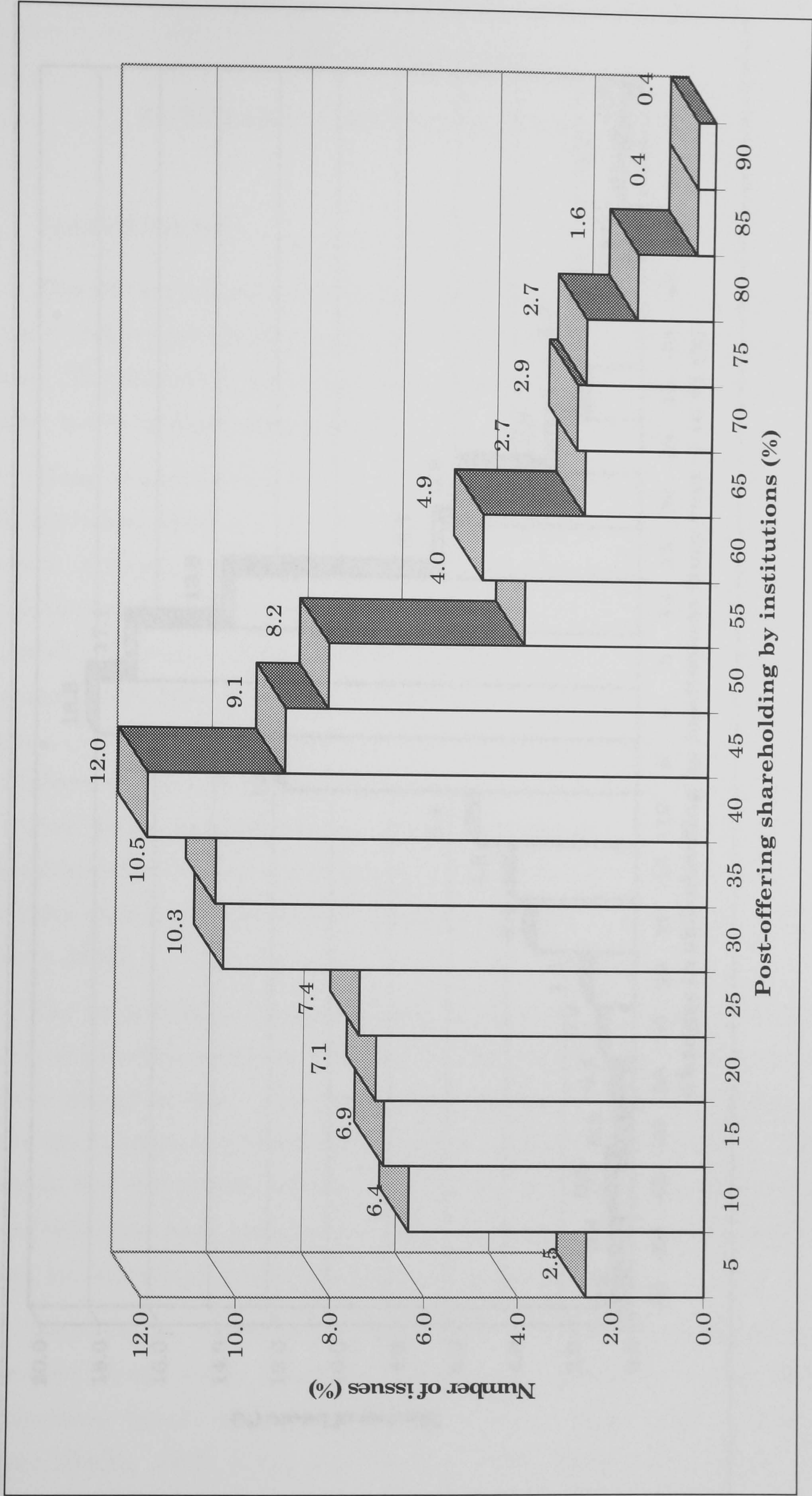
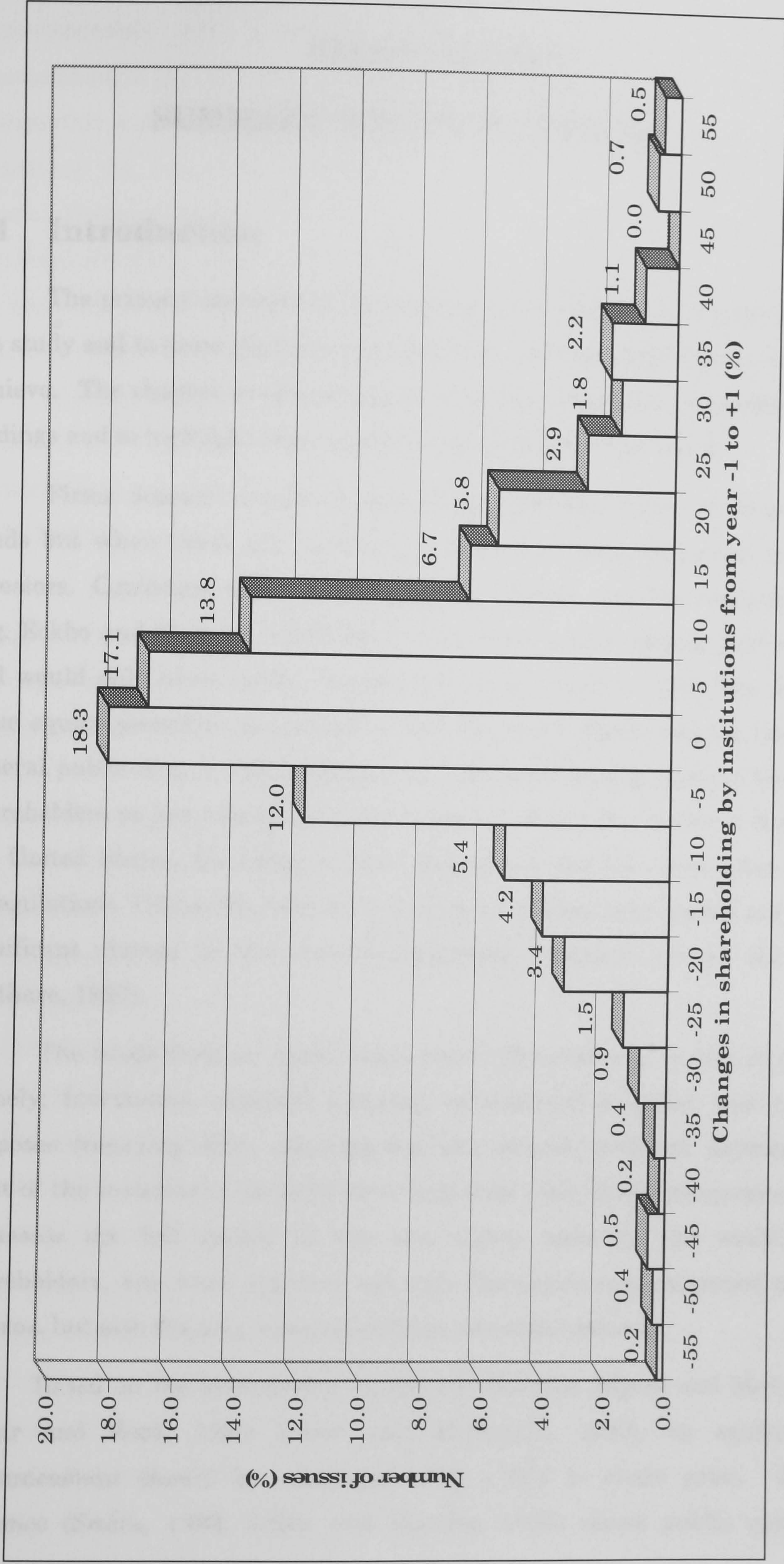


Figure 8.2 Distribution of changes in shareholdings by institutions around the offering



CHAPTER NINE

SUMMARY AND CONCLUSIONS

9.1 Introduction

The primary objective of this chapter is to summarise the key findings of the study and to draw conclusions in line with the objectives the study set out to achieve. The chapter is also designed to discuss important implications of the findings and to highlight some potential areas of further research.

Firms depend mainly on internally generated funds for their funding needs but when these are insufficient, they may issue securities to external investors. Consistent with the pecking order theory, existing research evidence (e.g. Eckbo and Masulis, 1995) shows that firms prefer issuing debt securities, and would only issue equity securities as a last resort. Once the decision to issue equity securities is reached, a firm chooses between issuing them to the general public (e.g., a firm commitment offer) and issuing them to the existing shareholders on *pro rata* basis (a rights issue). While the former is dominant in the United States, the latter is more common in the UK, even after the 1986 deregulations. Unless the take-up is very low, a rights issue should not lead to a significant change in the issuer's ownership structure around the offering (Kothare, 1997).

The funds from an equity issue can be directed to a variety of purposes, namely; investment purposes (internal or external projects), and cash flow purposes (repaying debt, repurchasing own shares, dividend payments, etc). Most of the investment projects have long-term cash flow consequences. Thus, to assess the full impact of the new equity issue on the wealth of the shareholders, one must evaluate not only the announcement-period abnormal returns, but also the long-run post-offering abnormal returns.

Based on the information asymmetry theories (Myers and Majluf, 1984; Millar and Rock, 1985; Lucas and McDonald, 1990), an equity-offering announcement should be associated with a fall in share price. Research evidence (Smith, 1986; Eckbo and Masulis, 1995) shows public equity offer

announcements are associated with a significantly negative two-day announcement period abnormal return of 3%, on average. Because of the information asymmetry, this price decrease is attributed to prospective investors correcting the perceived valuation errors. The evidence is mixed for rights issues. Relative to a firm commitment offer, a rights issue is associated with a low level of information asymmetry and consequently its announcement should be associated with a positive or a relatively less unfavourable stock price reaction. The early studies found a positive reaction but most recent studies have reported negative and significant reaction to announcements of rights issues. An exception, however, is the positive market reaction to the announcement of rights issues in some of the European markets (Tsangarakis, 1996; Bohren *et al.*, 1997).

In the recent years, research evidence has indicated that SEO firms suffer significantly poor post-offering abnormal stock returns. This evidence has survived numerous critiques regarding the appropriate models of abnormal return, the models of expected returns, and the significance testing techniques. Despite of all these research efforts, little is known about the long-run performance following rights issues let alone the UK market where rights issues are more dominant. Previous UK studies, Marsh (1979), Levis (1995), Suzuki (2000) and Abhyankar and Ho (2001), have some weaknesses relating to the sampling and sample period, measures of expected returns, and their heavy dependence on the traditional event study (CARs) as model of abnormal returns. An exception, however, is Abhyankar and Ho (2001) who used a calendar time multi-factor model. This study was designed to provide additional evidence from the UK equity rights issues in line with the recent methodological developments. It was also aimed at providing new evidence based on issue and firm characteristics as well as ownership structure in the issuers around the offering.

The rest of the chapter is organised as follows: Section 9.2 summarises the motivation, research objectives, sample selection and the methods used. Section 9.3 summarises the empirical findings. Section 9.4 discusses the findings and their implications. Section 9.5 highlights the main contribution made in the thesis. Finally, Section 9.6 highlights areas of potential future research.

9.2 Motivation, Research Objectives, Sample and Methods

9.2.1 Motivation

The main motivation for this research was the suggestion in the SEO literature in the US, e.g., Loughran and Ritter (1995), Spiess and Affleck-Graves (1995), that the subsequent SEO firms' underperformance is consistent with the notion that issuers successfully time equity issues to take advantage of transitory windows of opportunity. That is, based on their private information, managers are able to identify when prospective investors are willing to pay or are currently overpaying, and issue equity at these times to raise capital cheaply (overvaluation exploitation). The announcement alerts prospective investors of their valuation errors who respond by revising the price downwards. It is further suggested that the equity issue signal is not fully revealing and that as more information on the issue is revealed, prospective investors continue with revaluation, causing the underperformance. Since in a rights issue shares are issued to the existing shareholders on *pro rata* basis, overvaluation exploitation is unlikely to be the cause of the underperformance. This, therefore, raised the question as to whether there is underperformance following equity rights issues, and if so, what factors can explain it.

Further motivation came from the need to test for the generality of the underperformance evidence by using a different market (Fama, 1998; Fama and French, 1998) and in this case a different form of offering. The UK institutional setting, its differences from and similarities to the US market (highlighted in Section 1.2), on which most of the existing evidence is based also motivated the study.

9.2.2 Research objectives

Based on the motivation for this research the main objectives of this thesis were as follows: (i) To evaluate the long-run post-equity rights issue performance. (ii) To investigate the patterns of the average buy-and-hold abnormal returns in numerous segments of the SEO sample based on issue and firm characteristics. (iii) To investigate whether post-offering level of, and changes in, corporate directors' share ownership in the issuing firms around the

offering can explain the observed abnormal returns. (iv) To investigate whether the post-offering level of, and the changes in, institutional share ownership can explain the observed abnormal returns.

9.2.3 Sample and methods

The thesis focused on a sample of 818 independent equity rights issues conducted on the London Stock Exchange during the period 1986-1995, in which ordinary shares were offered to existing holders of ordinary shares. A rights issue provides such benefits as the maintenance of control by existing shareholders and the reduction of information asymmetry between firm's management and the market. This sample definition was important in emphasising the need to provide evidence on independent equity offerings via rights issues. By focusing on the post-1986 deregulations sample, the aim is to provide evidence over a period when companies had choice in the offering methods.

Besides its relative position on the world of financial markets, the UK market can also be described as a place where: (i) most equity offerings are made by rights issues. (ii) Institutional investors' involvement in corporate governance is considered higher and less restricted relative to the US (Short and Keasey, 1999). For these reasons, the UK market is a good platform for investigating various aspects of equity rights issues. By using the UK market, the aim is to provide further evidence not only from rights issues but also from a significantly big and different market.

The study used the buy-and-hold abnormal returns (BHARs) approach where the expected returns for sample firms were defined as the return on control firms using various benchmarks. The BHARs model was selected not only because of its statistical advantages over the traditional CARs model, but also because it mirrors one of the investors' experiences. Benchmarks were formulated by choosing the control firms based on size, size and industry, and on size and market-to-book ratios, not only to assess the sensitivity of the abnormal returns to a variety of benchmark specifications, but also to allow a comparison of our abnormal returns with those reported elsewhere using similar benchmark specifications. Among the three benchmarks, matching by size and market-to-

book ratio has been shown in Barber and Lyon (1997) as capable of mitigating the skewness problem in the BHARs. Moreover, the control firm is a non-issuing firm conservatively selected to ensure that the chosen firm did not issue any equity (via rights issue or otherwise) during the prior period or during the measurement period. To assess the significance of the abnormal returns both parametric and non-parametric tests were applied. To investigate factors that might explain the observed underperformance, the sample was segmented into numerous categories based on issue (issue size, issue frequency, issue purpose, issue volume and year of offering) and firm characteristics (firm size, firm age since IPO, market-to-book ratio, and industry). Furthermore, sample was segmented into quartiles of post-offering levels of, as well as of changes in, ownership (managerial and institutional) around the offering. The average buy-and-hold abnormal returns were then compared across these sample segments

9.3 Summary of the findings

9.3.1 Post-offering performance

The results show significant average long-run underperformance in firms that conducted equity rights issues on the London Stock Exchange during the period 1986-1995. A strategy of buying and holding shares of the rights issuing firms over the one-year (three-year, and five-year) period, from the end of the offering month, would yield, on average, a statistically significant abnormal return of -8.7% (-25.01% and -32.1%), relative to an alternative strategy of buying and holding shares of non-issuing firms of approximately the same pre-offering market capitalisation. This would have left the investor with 93 pence (83 pence, and 81 pence) relative to each pound from investment in size-matched nonissuers. In other words, for the investor to achieve the same terminal wealth, say five years later, 23% more money would need to be invested in the issuers than in the non-issuers of approximately same pre-offering market capitalisation. The results are very similar when the abnormal returns were measured against returns on control firms chosen by either size and industry, or size and market-to-book ratio. In all benchmarks and for all horizons, the results of both the abnormal returns and the fractions of underperformance were robust to parametric as well as nonparametric tests.

9.3.2 Trend in post-offering performance

An analysis of the underperformance in the first twelve months shows that the buy-and-hold abnormal returns were positive over the one- to three-month holding periods before they became negative from the five-month holding period. From the seven-month holding period, the buy-and-hold abnormal returns were significantly negative irrespective of the benchmark used. In a comparison of the benchmarks over the 60-month holding period abnormal return trend, no single benchmark was found to yield consistently different average buy-and-hold abnormal return from the others. For example, for holding periods lower than 30 months after the issue, the size-and-industry-adjusted abnormal returns are higher than in the rest, but beyond 30 months after the issue, the size-adjusted abnormal returns are higher than in the rest.

9.3.3 Cross-sectional analysis

The average buy-and-hold abnormal returns were further analysed in details to determine the nature of the observed underperformance. No evidence was found to suggest underperformance is different across firm size, market-to-book ratio, or issue size, quintiles. Neither is there evidence to suggest that the average buy-and-hold abnormal returns differ across different uses of the issue proceeds. However, there is evidence that the underperformance: (i) disappeared in the later years of the sample period (1994 and 1995). (ii) is slightly more severe in firms issuing during the period of high issuing activities. (iii) is significantly more severe in firms who issued more frequently (rights issue or other wise) during the five-year period prior to the rights issue under consideration (but did not issue in the five-year post-offering period). (iv) is slightly more severe for “young” issuers than for “mature” issuers. (v) is consistently significant in the engineering sector but is non-existent in the mining and electronic & electricals sectors.

9.3.4 Ownership structure

On average, corporate directors significantly reduced their ownership, whereas institutions significantly increased their ownership, in the issuing firms following the rights issues. Across the quartiles of post-offering

managerial shareholding, the underperformance is significant in all but in the third quartile (16%-28%). In addition, the underperformance is significantly lower for firms with the highest average institutional share ownership than for firms with the lowest average institutional ownership, against size-matched firms but not against the rest of the benchmarks.

The largest decrease in managerial shareholding leads to higher average buy-and-hold abnormal return whereas the change in institutional shareholding *per se* does not explain the underperformance. However, firms that experienced more reduction in managerial shareholding suffered more underperformance when managers already owned below median pre-offering level. Substantial increases in institutional shareholding led to improved abnormal performance when institutions' pre-offering holding was already higher than median pre-offering holding level.

9.4 Discussion and Implications

The evidence of significant underperformance is remarkably similar to the evidence reported elsewhere, on both public and rights issues, using similar approaches. See, for example, Spiess and Affleck-Graves (1995) for public offering in the US, Cai and Loughran (1998) and Kang *et al.* (1999) for public offerings in Japan. Also, see Cai (1998) for rights issues in Japan. The evidence is also similar to the evidence based on portfolio approaches (Loughran and Ritter, 1995; Jegadeesh, 2000). The sixty-month returns trend in our analysis using BHARs is very similar to one reported in Spiess and Affleck-Graves (1995) using CARs. The positive abnormal return observed on the first few months of offering was also reported in Spiess and Affleck-Graves (1995) based on CARs. Loughran and Ritter (1995) also found no evidence on significant underperformance in the first six months after the offering based on BHARs. Consequently, these lead to a conclusion that the SEO underperformance is neither a market specific (Fama and French, 1998) nor a public offering phenomenon. This implies that equity rights issuing firms also suffer long-run underperformance, and this finding should be considered when evaluating long-term investment strategies.

Fama (1998) and Jegadeesh (2000) argued that the reported underperformance could be due to poor methodology with respect to models of expected return (benchmark specification) and test statistics. Fama (1998) further views underperformance in issuing firms as normal random variation that occurs in efficient markets, meaning that the underperformance could simply be a chance result. The abnormal returns reported here are robust to three different benchmark specifications, namely, size-matched, size and industry-matched, and size and market-to-book ratio-matched nonissuers. Moreover, they are robust to the use of both parametric and non-parametric tests. The magnitude and the degree of significance of the reported abnormal returns, having considered such benchmark specifications and test statistics, suggest that it would be difficult to attribute this underperformance to chance as argued in Fama (1998).

A comparison of the underperformance across the benchmarks revealed no noticeable differences. This finding is similar to the finding in the previous studies (Loughran and Ritter, 1995; Spiess and Affleck-Graves, 1995; Cai and Loughran, 1998; Cai, 1998). In each study, the author(s) pointed out that the results were indistinguishable among the benchmarks, and that was the reason for their choice to report the results of the cross-sectional abnormal returns analysis based on one benchmark only. Likewise, although this study reports the cross-sectional results for each benchmark, a closer look shows the results were different in only a few partitioning factors. The results, therefore, question whether the effort to construct different benchmarks is worthwhile. Should investors consider different benchmark specifications in either their portfolio evaluation or their trading strategies? Another question emanates from the fact that so far, the studies that challenged the methodology for calculating long-run abnormal returns and find no evidence of significant underperformance, (Brav, Geczy and Gompers, 2000; Mitchell and Stafford, 2000; Eckbo, Masulis and Norli, 2000; Abhyankar and Ho, 2001), used the multi-factor or calendar time models. Other studies question whether these studies have weaknesses of their own, even though their methodologies are considered effective in controlling for risk. For example, Jegadeesh (2000) points out that Eckbo *et al.*, (2000) failed to exclude IPOs in their set of matched firms.

The cross-sectional analysis was designed to identify issue and firms' characteristics that might help explain the nature of the underperformance. It was motivated by Fama's (1998) argument in which he argued that low returns of the issuing firms might not be related to the act of issuing seasoned equity *per se*, but to the cross-sectional relations among different characteristics of SEOs. The evidence presented in this thesis shows clearly that while some of the issue and firms characteristics have no explanatory power, others have. The cross-sectional analysis results have several implications.

Firstly, the disappearance of underperformance in the latter years of the sample questions the recent evidence of insignificant underperformance in the issuing firms. Because most of them based their results on multi-factor, or calendar time, models of abnormal returns, it questions whether the lack of significant underperformance is consistent with the trend in other anomalies in the financial markets.⁹⁹ If the trend observed here is persistent over more years to come, then the recent studies reporting insignificant abnormal returns could be due to inclusion of more recent SEOs, in which the abnormal returns were positive rather than due to multifactor models being better models. Loughran and Ritter (1995) also observed disappearing underperformance in the last three years (1988 and 1990) of their sample which they attributed to the years being period of low issuing volume following both the 1987 market crash and the Gulf war. Looking ahead of the sample in this study, the last two years 1994 and 1995 are moving towards the low issue volume periods of the second half of the 1990s in the UK. An out of the sample analysis could help understanding the nature of this disappearance.

Secondly, the short-run market reaction literature (e.g. McDaniel, Madura and Akhige, 1994), showed that frequent (reputable) issuers suffer less unfavourable price reaction because their issue announcements do not come to the market as a surprise. The evidence that frequent issuers underperformed more significantly, suggests that this advantage is short-lived. It also raises questions like; why management go back to owners so frequently for new money

⁹⁹ For example, Schwert (2002) find evidence indicating that the size and value effects, reported in the eighties, have disappeared in the recent years, and there is a significant decrease in the magnitude of the January effect. One possible explanation has been that investors might have arbitrated them away in their effort to exploit them.

and why the existing shareholders always offer new money. Does high issue frequency imply availability of growth opportunities or inability of the firms to generate sufficient cash for future investments? Are the existing shareholders deceived by the increasing share price and become optimistic about the company's future but when the future earnings fail to sustain their optimism they lower the share price? Answers to these questions would add valuable knowledge on the nature of the relationship between issue frequency and shareholders returns

Thirdly, the evidence based on firm age since IPO contrast the evidence in Loughran and Ritter (1995) but it is consistent with the evidence in Spiess and Affleck-Graves (1995) and Cai and Loughran (1998). The evidence also supports the earlier evidence by Levis (1995), and Wolfgang and Thies (2002), who suggested that reissuing activities are partly responsible for the IPO underperformance. In addition, Levis (1995) pointed out that reissuing firms are the post-IPO good performers. While our evidence supports these arguments, it also has implication for the research on reissuing activities because it would be useful to investigate the good IPOs performers by comparing those that reissued to those that did not. Loughran and Ritter (1995) considered a similar analysis for SEOs by comparing winners (highest stock price run-up) between those who issued and those who did not. They concluded that it is whether the firm has issued stock, rather than the previous year's return, that matters for future returns.

Although the results show marked differences in the post-offering performance across the industry, an important observation is that, on average, 12 of 15 (excluding the "others" categories) of the wealth relatives in each horizon are less than one. This implies that the underperformance is pervasive across the sectors rather than being concentrated in a few specific industries.

The findings regarding ownership structure indicate that both managerial and institutional share ownership changed significantly following the rights issues in the UK, although in opposite direction. This evidence is different from the existing rights issues literature. Kothare (1997) argued that because the new shares in a rights issue are distributed to the existing shareholders on *pro rata* basis, a rights issue should not lead to significant

changes in ownership. Consistent with this argument, both Kothare (1997) and Cai (1998) found insignificant changes in managerial and institutional share ownership around rights issues in the US and Japan, respectively. When compared with public offers, the evidence presented here on the changes in managerial ownership is similar to that reported in Fields and Mais (1994) who report a significant decrease in insider (managers and directors) ownership. However, contrary to the results of this study, the authors found evidence of significant decrease in institutional share ownership for public offering firms.

The ownership results offer additional evidence to the existing evidence on the relationship between ownership structure and SEO performance. The announcement period abnormal returns are related to the level of both managerial shareholding (Fields and Mais, 1994) and institutional shareholding (Szewczyk *et al.*, 1992; Brous and Kini, 1994).¹⁰⁰ Slovin *et al.* (2000) find that excess returns for UK insured rights issues vary little with respect to institutional ownership. On long-run underperformance, Brous and Kini (1994) find positive relationship between analysts' abnormal forecast revisions of five-year earnings growth and institutional share ownership, a relationship the authors associate with subsequent issuers' underperformance. Cai (1998) finds contrasting results that neither the post-offering level of, nor the changes in, both managerial and institutional share ownership explain the underperformance of Japanese rights issuers. The results reported here show that issuing firms may benefit from the level of both managerial and institutional share ownership. However, since these results were sensitive to the benchmark used, they should be interpreted with caution.

The agency theory of Jensen and Meckling (1976) predicts that larger decreases in managerial share ownership should lead to more underperformance. The results of this thesis show that changes in managerial share ownership *per se* do not affect long-run performance of issuers in a way consistent with the prediction of agency theory. It is only when managers owned a lower proportion of shares prior to the offering that a further substantial decrease leads to poorer performance. The evidence, therefore,

¹⁰⁰ Filbeck (1996) finds no evidence of relationship between institutional ownership and announcement period abnormal returns in bank issuers, which he attributed to its regulatory environment.

offers support to the prediction in Vishny and Shleifer (1988) and Morck *et al.* (1988), and adds to the earlier evidence reported in Palia and Litchenberg (1999) that the impact of the changes in managerial share ownership on firm performance depends on the pre-event holding. The evidence presented here leads to the conclusion that the difference between our results and those reported in Cai (1998) could be attributed to the failure to take into account the notion that the impact of the changes is dependent on the pre-event holding.

The changes in institutional share ownership were also analysed and the results showed very similar picture. Firstly, the performance is better the higher the post-offering institutional shareholding but was sensitive to benchmark specification. Secondly, the changes in institutional shareholding affected post-offering performance only when the pre-offering level was taken into account. Hence, substantial increases in institutional shareholding are associated with increased buy-and-hold abnormal returns when institutions already owned more than median level prior to the offering.

Finally, two more questions can be raised from the results. First, from the review of literature, rights issues are also shown to follow periods of high stock prices (Marsh, 1979; Levis, 1995; etc). This would mean there is an element of timing, which may not be in the context of exploiting new investors, but perhaps to coincide with periods when existing shareholders are more willing to provide additional cash. Although Michailides (2000) finds no significant differences in buy-and-hold abnormal returns between “hot” and “cold” issuers, a further investigation of the timing possibility might add significantly to our understanding. Thus, this study suggests that the underperformance results are more consistent with the world described in Kang *et al.* (1999), in which investors are as optimistic about the investment opportunities of some of the issuing firms as are the managers. Even if managers are more realistic, given a period of increasing share price, they may want to take advantage of the high valuation and raise more funds cheaply from the existing, but optimistic, shareholders. When the investment opportunities eventually turn out to be less advantageous than expected the issuing firms underperform.

Second, finding robust evidence of significant post-offering underperformance appears to contradict the long-standing notion of market efficiency. If the evidence stands against market efficiency then the abnormal performance may present investors with opportunities for active strategies to generate higher returns. However, research shows the difficulties involved in upholding such a conclusion because, given the problems of estimating normal returns, the results are less convincing as evidence against market efficiency, unless it can be proved that trading on the basis of such strategies can produce abnormal returns net of transaction costs. However, the results of this thesis are important in the sense that they add to the debate as to whether the market really reacts slowly to information or information provided in a particular announcement is not revealing enough, that markets learn more from subsequent information releases, and continues to adjust share prices.

In another development in this debate, Fama (1998) consider the evidence based on multi-factor asset-pricing models showing disappearance of underperformance. At face value, it would seem that such results confirm market efficiency against other models of abnormal return. The main reasoning so far has been that these models control for risk better than the rest of the models (Eckbo *et al.*, 2000). However, Fama (1998) cautioned against such interpretation because the multifactor model are asset-pricing models and not models designed to test for market efficiency, for the models to test market efficiency require a model of normal return generating processing.

Overall, the findings in this study have implications for many players: investors (old and new), portfolio managers, analysts, researchers, etc. Existing shareholder might need to think about the long-run consequences of taking up the new shares to their wealth. Evidence shows that UK occupational pension funds do not monitor firms in which they invest (Faccio and Lasfer, 2000). Perhaps the major shareholders, such and pension funds and insurance companies should take a more active role using their ability and expertise to exert pressure to issuing companies through the issuing process as well as to exercise more control over the post-offering period. Fund/portfolio managers may want to consider the underperformance evidence in their portfolio strategies, especially those issuers with issuing reputation. For future research,

the findings question whether the effort directed to benchmark specification is worthy because as in the previous studies, different specifications do not yield notable differences in abnormal returns. Instead, future efforts should be directed towards other unresolved matters such as the unknown distributional properties of buy-and-hold returns (Gompers and Lerner, 2003) or building a strong theoretical framework to explain the long-run performance following various managerial decisions. For rights issues, little is known regarding the whole range of hypotheses discussed in Chapter 3. This study should therefore be seen as another step down the road in the search for an understanding of the underperformance of seasoned equity offerings.

9.5 Contributions of the Study

In summary, the thesis made the following contributions to the existing long-run underperformance literature:

(i) Except for Michailides (2000), this is the only UK study that offers five-year post-offering evidence based on buy-and-hold abnormal returns in which returns on a control firm, conservatively chosen on size, size and industry, and size and market-to-book ratio, are proxies for expected returns. The rest of the main previous studies, Marsh (1979), Levis (1995), Abhyankar and Ho (2001) and Suzuki (2000), use shorter sample periods and are based mainly on the CARs model except Abhyankar and Ho (2001) who used the calendar time model. The differences between this study and Michailides (2000) are as follows: Firstly, the sample is restricted to post-1986 deregulation period during which companies had more choices of offering method. Secondly, although the sample period intersects with that of Michailides, it is deliberately restricted to equity rights issues in order to provide evidence that, strictly on average, represents performance of equity issues where ordinary shares are offered to existing shareholders only. Thus, in general these results constitute incremental evidence of underperformance following rights issues, but in particular, they can be seen as important new evidence based on a sample of UK equity rights issuers.

(ii) Using three different benchmarks of expected returns the thesis has been able to compare the underperformance following equity rights issues with

the underperformance reported elsewhere as well as in other SEOs. Moreover, from the analysis of the pattern of the buy-and-hold abnormal returns in each benchmark used, this study is the first to document the initial performance for rights issues.

(iii) This study is the first to document evidence based on issue and firm characteristics in the UK where it was found the offering year, issue frequency, firm age since IPO, and the industry sectors may explain part of the underperformance.

(iv) The thesis contributes to the literature linking ownership structure to the post-SEO performance literature by adding to the existing evidence; short-run evidence (Szewczyk, *et al.*, 1992; Brous and Kini, 1994; Fields and Mais, 1994; Filbeck, 1996; Slovin *et al.*, 2000) and long-run evidence Brous and Kini (1994) and Cai (1998). For example, Cai (1998) finds insignificant changes in managerial and institutional share ownership following Japanese rights issues and no evidence to suggest that the post-offering levels of and changes in both managerial and institutional ownership in the rights issuing firms could explain the issuers' underperformance. In contrast, the results reported here provide evidence that ownership structure changed significantly. Both the managerial and institutional share ownership have some influence on the underperformance, and the changes in the ownership can explain part of the underperformance when pre-offering level is taken into account. Thus, this thesis provides the first evidence for the UK equity rights issues linking ownership and post-offering performance.

9.6 Future Research

In almost all studies indicating non-existence of SEO underperformance, Abhyankar and Ho (2001), Brav, Geczy and Gompers (2000), Eckbo, Masulis and Norli (2000), Mitchell and Stafford (2000), the evidence is based on either multi-factor or calendar time models; none is based on the BHARs model. The disappearing underperformance in the later years reported here questions whether the evidence is consistent with trends in the other anomalies in financial markets. It would be interesting to investigate whether the disappearance of the underperformance is a function of better abnormal

performance models and improved test statistics, or an effect of including in the sample more years in which abnormal returns were significantly positive.

The reported underperformance is also significantly more severe in firms who issued more frequently (rights issue or otherwise) during the five-year period prior to the rights issue under consideration (but did not issue in the five year post-offering period) than in firms who had only one rights issue over the (-5, + 5) year period). The existing short-run evidence (McDaniel, Madura and Akhige, 1994) suggests that abnormal returns for equity announcements by frequent (reputable) issuers are more favourable, than abnormal returns for equity announcements by infrequent issuers, because the issues come to the market as little surprise. The evidence in this thesis suggests that investors may be concerned with the frequency at which management go back to shareholders for more cash, rather than with their reputation as a frequent issuer. Data permitting, it would be interesting to investigate the nature of the relationship between the issue frequency and firm performance. Does issue frequency reflect the availability of investment opportunities more than the firm's own resources could finance, or just the general failure of the firm to generate cash. In addition, it would be interesting to find out whether the issuing firms direct funds to the proposed projects, and how the outcome will affect their future performance. It could be that investors are more disappointed by these firms over time when their expectations, given the reason for their frequent issues, are not met.

The thesis was limited to the investigation of the long-run underperformance following UK equity rights issues and to the investigation of the issue characteristics, firm characteristics, and ownership structure. Equity rights issue is no longer the only equity offering method used in the UK following the 1986 deregulation. Placings, open offers, or combinations, are frequently utilised. An investigation, preferably a comparative investigation, of long-run returns to investors who invest in the issuing firms that used such other offering methods would add to our knowledge in this area. Initial efforts have been made in the analysis of the announcement impact of placings (Slovin *et al.*, 2000; Armitage, 2000) and open offers (Armitage, 2000b; Suzuki, 2000). Abhyankar and Ho (2001) provide the first evidence on long-run performance of

UK placings over three years after the offering. Similar initiatives have been carried out on UK convertible debt (Abhyankar and Dunning, 1999), but less or none on UK straight debt. It would be interesting to take advantage of the relative size of the UK market to investigate whether the long-run effects hold in issues of convertible and straight debt securities.

In the review of the long-run underperformance literature in Chapter 3, it was shown that more hypotheses other than the overvaluation exploitation have been suggested as plausible explanations for the underperformance phenomenon. A direct testing of these hypotheses using UK data has a potential of adding to the underperformance knowledge. Michailides (2000), for example, examined the overvaluation hypothesis in the timing context and found that firms that issue during periods of high issuing activities do not perform differently from those who issue during periods of low issuing activities. Research evidence shows the rights issues are also made during periods when the issuer had experienced good share price performance (Marsh, 1979; Levis, 1995; Michailides, 2000; Abhyankar and Ho, 2001). An examination of abnormal misvaluations around the offering and their relationship with post-offering performance could prove very useful (see, for example, in Jindra, 2001). Data permitting, an investigation of earning management (Rangan, 1998; Teoh *et al.*, 1998) and insider trading (Kahle, 2000) activities around rights offerings has the potential of adding to the existing knowledge on post-rights issue performance.

Finally, Affleck-Graves and Page (1996) pointed out that rather than overvaluation exploitation, underperformance of rights issues is better explained by the inability of issuing firms to generate sufficient internal funds to finance future projects. Therefore, examining the operating performance of the issuers around rights issues would prove useful. Although the operating performance measure tends to mean revert, finding a significantly unusual trend around the offerings could explain the underperformance. Since issuers typically have had recent improvements in their operating performance, the market may appear to be overweighting these improvements and underweighting the long-term mean reverting tendencies in operating performance measures. At the time of the issue, therefore, the market price reflects the capitalisation of transitory

operating performance. After the offering, when the transitory nature of operating performance becomes apparent, the shares underperform.

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