TIMING OF INITIAL PUBLIC OFFERINGS, SEASONED EQUITY OFFERINGS AND TAKEOVER BIDS FINANCED WITH EQUITY. UK EVIDENCE.

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DECLARATION

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ABSTRACT

This thesis examines the "timing" of equity issues. We seek to find the factors that "drive" the time series variation in the equity issuance activity. Our main motivation is to see whether the Initial Public Offerings, Seasoned equity offerings and Takeover activity financed with equity move together. Our second motivation is to see whether certain individual factors affect the timing of the three corporate activities. We focus our research effort on whether business conditions, adverse selection costs and "sentiment timing" can explain the variation in equity issue activity across time.

Economic conditions have a significant effect on equity issuance activity. More firms make an IPO and more capital is raised from IPOs during the upturn of the business cycle relative to the downturn of the cycle. The impact of economic conditions on the SEO volume is also positive but marginally significant. In addition, more bidders use equity to finance a takeover bid during the upturn of the business cycle.

The improvement of business conditions has a significant effect on the magnitude of adverse selection costs associated with the announcement of a SEO and a takeover bid that is financed with equity. During the upturn of the business cycle the market reacts less adversely to the announcement of these actions while in the downturn of the cycle the announcement of the SEO and the equity financed bid is accompanied by more negative returns. Underpricing for IPOs however is not lower during the upturn of the business cycle.

Firms that make an IPO, a SEO and a takeover bid that is financed with equity are associated with significant adverse share price movements which impose significant indirect costs to the issuers and bidders. This thesis investigates how these costs affect the timing of the three corporate actions. The magnitude of adverse selection costs has a significant effect only on the volume of Seasoned equity offerings with more firms making a rights issue during periods when the announcement of the recent rights issues is accompanied by less negative returns. IPO volume is not higher when the average first day returns of the recent IPOs are low and the percentage of bidders that use equity to finance the bid over all bidders is not higher when the drop of the share price of the bidder on the announcement of the recent equity financed bids is smaller.

It has been widely documented that firms which make an IPO, a SEO and a takeover bid that is financed with equity offer inferior returns to their shareholders in the post-issue period. Cognitive bias and deliberate timing of these actions at periods when share prices are irrationally high are the best explanations that the literature has provided for the underperformance. We find a significant underperformance of SEOs and bidders that use equity to finance the bid and IPOs if the high first day returns are not included. These findings suggest that the above firms are overvalued at the time these action take place but does not address whether variations in volume across time are driven by variation in the degree of overvaluation. We find that only variations in IPO volume are driven by variations in the degree of overvaluation. Periods when more capital is raised from IPOs are periods when the average IPO is more overvalued than IPOs that go public in periods when IPO activity slows down.

Variations in the SEO volume and the equity financed takeover activity are not driven by overvaluation exploitation.

Time series regressions on the amount raised from IPOs and SEOs reveals the significant role of investors' sentiment on the timing of equity issues. We use financial analysts earnings forecasts as a proxy for market sentiment and we find that more capital is raised from IPOs during periods when analysts' earnings forecasts for the recent IPOs are more optimistic. We also find that more capital is raised from SEOs during periods when analysts' earnings forecasts for the recent SEOs are more overoptimistic.

Previous empirical studies suggest that firms time the issues at the peak of their profitability. Our evidence from financial analysts earnings forecast revisions reveal that SEO firms time the issue after a period of high earnings growth and prior to a small deterioration in earnings while IPO firms time the issue at the beginning or during a period of sustainable earnings growth and not at the peak of their profitability.

CHAPTER 1: INTRODUCTION

1. RESEARCH MOTIVATION AND OBJECTIVE OF THE THESIS.

During the life-time of every company there are some important decisions to be made with regard to its future growth. Almost all companies start as a very small private company and gradually they begin to grow. In the beginning of the company's life, its growth can be funded by additional investments from the entrepreneurs or from retained earnings. At some point however, the demand for investment may exceed the financial capabilities of its owners or the company's profitability. Then, important decisions have to be made in order to acquire the funds that are necessary to finance further development. Borrowing money from creditors is an option but another one is the issue of additional equity capital. At the early stages, the new capital is provided by the owners of the firm. At some point however, as the size of the firm increases and the need for investments intensifies, the owners may not be able to provide the capital needed.

A company that is held by a small number of investors and has reached that point can raise new capital by offering new shares to the public. An Initial public Offering is the first attempt to raise capital from outside investors. With the Initial Public Offer, shares are offered to the public and the company becomes listed on a Stock exchange where its shares begin to be traded. There are a lot and important benefits for a firm that makes an IPO. By going public, a firm can raise capital that can be used to fund the growth of the company, a growth that perhaps could not be funded by borrowings from a bank. It can provide an opportunity to original shareholders to liquidate their investment who can sell a part or all of their shareholdings in the company through the IPO. Another important benefit is that by going public, the company increases its bargaining power with clients and creditors. Banks are aware that after the listing, firms increase the number of alternative sources of finance and they have to be competitive and offer cheaper credit to the newly listed firms in order to attract their custom. Going public increases the customer awareness of the company and may result to higher sales if customers prefer to deal with a listed company as a more serious entity relative to an unknown private firm that is less accountable and with less constraints on its managers' discipline.

All the benefits of going public however do not come without a cost. The most obvious of the costs is the direct costs which include the underwriters' fees, stock exchange fees, auditing fees, etc. The underwriter plays a vital part in the Initial public offering. It advises the firm on the regulations and the ways of going public, it participates in the pricing of the offer and helps to market and sell the issue to investors. It also guarantees, in some cases, that the issuer will receive all the money from the issue even if some part of it might not be sold.

Important indirect costs also could act as a deterrent from going public. Every listed company has to conform with the stock exchange regulations. Every vital piece of information that can be used by investors to determine the present and future value of the company has to be promptly disclosed to the public. Among those pieces of information are details about ongoing and planned projects and other information that can be used by competitors to understand the managerial and marketing strategy of the public company and help rival firms to establish a more efficient competition. In same cases, these costs may be big and prevent a firm from going public but these costs are very difficult to be measured and quantified and therefore may be of lesser importance.

One of the most publicised indirect costs of going public is the cost created by selling the shares at a price that is below their intrinsic value. Firms that make an IPO have large positive returns in the first day that the shares are traded. These large first day returns represent a big cost to the issuer since the underpricing is an average of 10 to 15% with big variations from country to country and issuers characteristics. A large number of explanations have been proposed for these large first day returns and they are extensively analysed in the thesis. However, no matter what is the factor that causes such big returns, the bottom line is that the company would benefit if these returns are smaller under the assumption that the lower first day returns are caused by pricing the issue at a price closer to the one that investors are willing to pay.

After the Initial public offer, a firm may reach a point when the funding of future projects requires additional equity issues. In such cases the firm can make a Seasoned Equity Offer. New shares are issued and offered to investors. In some counties such as the US, these new shares are offered to the general public that expresses an interest in buying the issue. In the UK and other countries the method of Seasoned Equity Offering is different. Regulation requires that the new shares must be offered first to existing shareholders who have two options: either to exercise their right to buy the new shares that are allocated to them or not exercise their rights and sell their rights to the market to an investor that wants to buy the shares.

Such an equity issue has advantages and costs similar to those associated with an IPO. It can provide a cheaper source of financing a project. It also creates less constraints on the management relative to debt which has to be serviced regularly by fixed interest payments. The costs of a SEO include underwriters fees who organise, market and sometimes guarantee the complete sell of the issue. Disclosure of the use of the proceeds of the issue may reveal to competitors the firm's plans for the future or its financial state resulting to a release of vital information to competitors adding to the costs of the SEO.

As with IPOs there are important indirect costs associated with a SEO. The announcement of a SEO is accompanied by a drop on the share price of the issue. This drop is 3% on average in the US and can create a loss of market value that for some large issuers can wipe out a large portion of the issue proceeds. The proposed explanations for these adverse price movement are numerous and are discussed in detail later on. Managers would prefer to see the smaller price decline on the announcement of the issue or even a positive market response.

Firms that need to expand have two available routes: First, they can make plans to expand "internally" by investing in their own production lines. A second way of expansion is offered by mergers and acquisitions. An acquisition of another company has important advantages. It provides a quicker and sometimes a more efficient way of expanding relative to internal expansion especially into new markets and new products. The target firm's expertise can be used and make profits is shorter periods than the internal expansion. An acquisition however is not a pain free exercise since there are disadvantages as well. The most important of them seems to be the overestimation of the potential gains that can arise from the acquisition. The bidder may overpay for a target and the acquisition may never realise its potential destroying bidders' shareholders value.

When a public company announces a takeover bid for another company that bid has an impact on the bidder's share price. The market reaction on the announcement of a takeover bid is affected by numerous factors that are related to the profitability and the synergies that could arise from the proposed takeover. What the literature supports however is that takeover bids which are financed with equity have significantly lower returns than takeover bids that are financed with other means of payment. That negative reaction, even though is not of the magnitude of the negative reaction to the announcement of a SEO, is an indirect cost that can add to the costs of the acquisition.

The first objective of this thesis is to gain a greater understanding of the market response to the announcement of a seasoned equity offering or a takeover bid that is financed with equity and the large first day returns observed for the Initial public offerings. By uncovering what drives these large price movements we can get useful insights of what are the management's incentives behind the timing of these issues at certain periods of time.

The second objective of this thesis is to try and evaluate the impact these significant price movements, which create extra costs to the issuer, have on the timing of equity issues. Firms that make an IPO or a SEO or a takeover bid that is financed with equity can benefit if these large adverse share price reactions are minimised. What is the role of these adverse selection costs and how important they are in the timing of equity issues is not documented internationally. Do managers really care about how large these costs are or do they consider them as a by-product of their actions with no significant influence are among the questions that will be answered in this thesis.

Firms that make an IPO, a SEO or a takeover bid that is financed with equity can obviously benefit if the price of the issue is high. If the issue price is high, more capital can be raised, or a smaller portion of the firms ownership will be sold to acquire the necessary proceeds to fund the investments and in the case of a takeover that is financed with equity, the target can be bought cheaper. It is widely documented in the literature that firms that make an IPO and a SEO are bad performers after the issue takes place. There are also evidence that bidders underperform after the issue and that bidders that use equity to finance the bid have significantly worst performances that bidders that use cash offers. The most accepted reason behind the underperformance is that these actions took place around periods when their current share prices were higher than their intrinsic values.

The third objective of this thesis is to investigate the post-issue performance of issuers and bidders because we can draw significant conclusions about the true value of the share prices of the issuers and the bidders at the time of the issues and the bids from the way that these firms perform. The literature suggests that issuers are overvalued when they make the issue. If equity issue volume is driven by overvaluation exploitation then more equity issues and more equity financed bids should be made when firms can achieve higher prices for their offers. Such an action will result to firms that made these activities in heavy volume periods to have worst performances than the firms that made the activities in lights volume periods. The comparison of the post-event performances across "intense" or "tranquil" periods will reveal whether managers deliberately exploit overvaluation.

Although there are evidence that issuers time the issue when their share prices are above the fundamentals, there is little consensus as to what "persuades" investors to buy these overpriced issues. Obviously when the market sentiment is favourable, prices are bound to be higher and investors may be willing to participate in the new equity issues more eagerly. The market sentiment however is a factor that can not be quantified with accuracy. Therefore, researchers have to use proxies to "measure" the market sentiment. One of the factors that can act as a proxy for market sentiment is the financial analysts' earnings forecasts. Whenever the market sentiment is favourable, analysts should forecast higher earnings and when market conditions are gloomy earnings forecasts should be lower. The thesis makes extensive use of financial analysts earnings forecasts in our attempt to find how the timing of IPOs and SEOs is affected by the market sentiment.

The fourth objective of the thesis is to investigate the effect of financial analysts earnings forecast on the timing of Initial Public Offerings and Seasoned equity offerings in the UK. Financial analysts' earnings forecasts should reflect and to some extent affect the market sentiment. If equity issuers exploit investors' sentiment then the use of financial analysts' earnings forecasts can be used to uncover such a relation.

The UK market is relative understudied relative to the number of studies that investigate the timing of equity issues in the US. By using a different data set we are able to test the alternative hypothesis that have been proposed as driving forces behind the time series variation of equity issues volume and in takeover activity. We pursue out investigation by looking at the three corporate action in a unified framework. This thesis has the benefit of testing whether the same factors drive the IPO, SEO and takeover activity in the UK. We felt the need to pick up the pieces and complete the puzzle of equity volume variation by testing the effect of three main factors on the timing of equity issues: the adverse selection costs, overvaluation exploitation and financial analysts' earnings forecasts optimism. Indeed, the final and most important objective of this thesis is to see whether the timing aspect of the equity issue decision is driven by the same factors whether the issue is made for an IPO or a SEO or a takeover bid.

2. Overview and Structure of the Thesis

The thesis contains ten chapters. Chapter 1 introduces the thesis and describes our research motivation and the structure of the thesis. Chapter 2 makes a reasonable comprehensive review of the empirical findings of other studies concerning the behaviour of Initial Public Offerings, Seasoned Equity Offerings and Takeover bids. It describes the effects that the IPOs, SEOs and takeover bids have on the share price of the issuer and evaluates the proposed explanations that can account for such big share price movements. We also take a look at what the literature has documented with respect to the long run performance of equity issuers and takeover bidders as well as the reasons why these firms perform badly after the issues. Finally we describe what factor can contribute to the time series variation in the volume of equity issues with emphasis on the effect that adverse selection costs, overvaluation exploitation and business conditions have on the timing of equity issues. The chapter 2 concludes with a review of previous empirical work on the timing of UK equity issues.

Chapter 3 explains the importance of financial analysts earnings forecasts in today's world stock markets. It reviews previous studies that have investigated the accuracy of financial analysts' earnings forecasts around equity issues and the influence financial analysts' earnings forecasts have on the timing of equity issues. Chapter 3 concludes with a review of how financial analysts' forecasts are affected by the announcement of a SEO or a takeover bid.

In Chapter 4 we describe the data used, the data collection methods and the methodology followed in this thesis. The sources used to acquire details about the companies that made an IPO, SEO and takeover bids are mentioned. We analyse the methods we follow to calculate first day returns for IPOs and abnormal announcement period returns for SEOs and Takeover bids as well as abnormal long-run performances. In addition, we explain how financial analysts adjusted or unadjusted earnings forecasts errors and earnings forecast revisions are calculated.

Chapter 5 is the first empirical chapter of our thesis. We investigate the timing of UK Initial Public offerings with special emphasis on the effect that the magnitude of the first day returns and business conditions have on the volume of IPOs. We also report our findings on Post-IPO performance which is very useful in our attempt to test whether IPO volume in the UK is driven by overvaluation exploitation.

Chapter 6 investigates the timing of Rights issue activity in the UK. The effects of business conditions on rights issues activity and on adverse selection costs are discussed. Chapter 6 also examines what are the forces behind the time series variation in UK SEO activity and seeks to find whether the magnitude of adverse selection costs plays a significant role in the timing of rights issues. The last part of chapter 6 reports our findings on the post-announcement performance of rights issuers and whether rights issuance activity is driven by overvaluation.

In Chapter 7 the centre of attention is the takeover bids that are financed with equity. We report what impact the announcement of a takeover bid has on the share price of the bidder and especially the differences among bids that are financed with equity and cash. Since takeover bids financed with equity are associated with significant adverse selection costs we investigate how these costs are affected by the business cycle and how they affect the timing of equity financed takeover bids. As with the previous two chapters, chapter 7 concludes with the evidence on the long run performance of bidders partitioned by the method of payment and tries to find whether equity financed takeover activity is driven by overvaluation exploitation.

Chapter 8 is the first chapter where we use financial analysts' earnings forecasts to see their effect on the timing of Initial Public Offerings. We present details about the behaviour of analysts in forecasting the earnings of UK listed companies. We then limit our focus on the firms that make an IPO and see how accurate are analysts when they forecast the earnings of recently public firm followed by an investigation of what effect analysts' optimism has on the timing of IPOs. In the last part of chapter 8 we look at how analyst view that the profitability of IPOs will behave after the listing by looking at the analysts' earnings forecast revisions in the months following the IPO.

Financial analysts earnings forecasts are also used in chapter 9 where the centre of attention is the firms that make a rights issue in the UK. We see how accurate are analysts in forecasting the earnings of rights issuers in the years before and after the issue and what effect the magnitude of their forecast errors has on the timing of UK seasoned Equity offers. The impact that the announcement of a rights issue has on the profitability of the issuer concludes chapter 9.

Chapter 10 concludes the thesis by providing a survey of the main empirical findings of our study and analyses what are the contributions of the thesis and their significance. Most important it summarises on the main objective of the thesis which is to see whether the timing of the three corporate activities exhibits a degree of unification. Future research areas that can further strengthen the legality of our findings conclude the thesis.

3. LIMITATIONS TO THE STUDY

A number of limitations may be identified in the empirical research of the thesis:

- The maximum effort has been made within reasonable time limits to acquire the data that will maximise the sample and will enable us to test the alternative theories with the greater statistical significance. However, data unavailability has been a problem during this research and may limit the significance of our findings.

CHAPTER 2: EMPIRICAL FINDINGS ABOUT THE BEHAVIOUR OF FIRMS THAT MAKE INITIAL PUBLIC OFFERINGS, SEASONED EQUITY OFFERINGS AND TAKEOVER BIDS.

2.1.INTRODUCTION

Firms that make an Initial Public offering, a Seasoned equity offering or a takeover bid have certain similarities. They are all characterised by three significant stylised facts: first, on the first trading day of the IPO firm and on the announcement of the SEO or the takeover bid, the share price of the issuer or the bidder is characterised by significant movements, second, firms that make an IPO or a SEO or a takeover bid perform poorly in the long run after the event and third, there are periods when the equity issuance and takeover activity is extremely high and other periods when activity subsides.

This chapter first presents the empirical evidence of previous researchers about these three stylised facts and then makes a reasonably comprehensive evaluation of the explanations that have been proposed as the driving forces behind these patterns.

2.2. PRICE PERFORMANCE ON THE DAYS AROUND THE EQUITY ISSUE AND THE TAKEOVER BID

Equity issues and takeover bids are major corporate events and have a big impact on the share price of the issuer. One of the best known things in the world of finance is that firms that go public experience large positive returns on the first day their shares are traded on the stock exchange. Firms that go public see their share price increasing by more than 10% on average in the first trading day in the UK and US, an increase that represents a significant indirect cost for the issuer.

IPOs are not the only equity issues that are characterised by significant share price movements. An announcement of a seasoned equity issue also has a significant impact on the share price of the issuer. US studies document that the announcement of a SEO is accompanied by a significant drop on the share price of the issuer of 3%, a drop which imposes significant indirect costs to the issuer. In addition to SEOs, takeover bids also have an effect on the share price of the bidder. Several studies have indicated that the bidder's shareholders are worst off by the announcement of the takeover bid and that the share price drop is greater when the takeover bid is financed with equity. In the next part we present the empirical findings of previous studies on the issue of the market reaction to the equity issues and the takeover bids and evaluate the reason behind these abnormal share price patterns.

2.2.1.First Day Returns for IPOs

All studies that investigate the behaviour of IPOs have documented that firms that go public experience large positive initial returns. The positive first day returns for IPOs is a phenomenon that is present in almost all the world's stockmarkets. Loughran, Ritter and Rydqvist (1994) examine average initial returns for 25 countries and in all of them IPOs have large positive first day returns. These returns range from 4.2% in France to 80.3% in Malaysia. Levis (1993) finds that UK IPOs have an average return of 14.3% in their first trading day with 82% of the issues having positive returns. Ibbotson, Sindelar & Ritter, (1988) find that the average first day return of 10,626 US IPOs made between 1960 and 1992 is 15.26%.

Even though positive first day returns is a fact, there is a wide variation in the magnitude of the first day returns according to issuers characteristics and the method of issue. Levis (1993) finds that the UK IPOs made with the method of offer for sale which are offered to the general public have lower first day returns,11.50%, relative to the IPOs that were placed directly with investors and had an average return of 15.28%. Byrne & Rees (1996) also report that UK IPOs made as placings have a significant higher return by 3.31% relative to the rest of the issues. Levis (1993) and Byrne & Rees (1996) report that the larger the issue, expressed as a percentage of equity offered relative to the market value of the firms, the lower the first day returns are.

A large variation in average first day returns across different industries is also found by several studies. Ritter (1984) reports that firms in the natural resources industry in the US have significantly higher first day returns relative to other industries. Ritter (1991) also reports significant variations in the average first day returns across industries with financial institutions having an average first day return of only 3.69% and oil and gas firms having an average return of 30.92% on their first trading day.

Aggarwal & Rivoli (1990) report that firms that go public with an offer price smaller than $5 have an average first day return of 24.78% while the issues that are priced higher than $5 have an average return of 6.66%. Underwriters' reputation also affects the average first day returns. Issues that are underwritten by more prestigious underwriters have lower first day returns. Aggarwal & Rivoli (1990) report that issues with the most prestigious underwriters have an average return of only 4.91% on the first trading day while the issues that are underwritten by the least known underwriters have an average first day return of 22.45%, result which is also supported by Carter, Dark & Singh (1997) who find that three different measures of underwriters' reputation show that IPOs underwritten by more prestigious underwriters have smaller first day returns than IPOs which are underwritten by least known underwriters.

Many studies document that the magnitude of the first day returns is affected by the uncertainty that investors feel about the intrinsic value of the IPO. Firms which are young, small in size and make smaller issues are considered to be ex-ante as more risky and are characterised by higher first day returns. Ritter (1984) finds that firms with small sales have higher returns while Beatry & Ritter (1986), Levis (1993) and Mauer & Senber (1992) find that firms that make smaller issues relative to their market values have higher first day returns. Mauer & Senber (1992) report that older firms are characterised by lower first day returns. The strongest evidence that uncertainty that surrounds the intrinsic value of the IPO affects the first day returns comes from studies of non-operational IPOs such as closed end funds and Master Limited Partnerships. These firms have little uncertainty for their true value and have very small, almost insignificantly different from zero first day returns. Michaely & Shaw (1994) find that 58 Master Limited Partnerships IPOs have an average first day return of 0.12%, insignificant from zero. Levis & Thomas (1995) find that investment trusts IPOs have a very small first day return of 1.91%.

Despite the effect that various factors have on the magnitude of the first day returns the evidence is quite clear. Initial public offers are characterised by significant positive first day returns. If the share price at the end of the first trading day reflects the intrinsic value of the firm then it is clear that the IPO firm has offered a "bonus" to investors and that represents an indirect cost for the issuer. That abnormality has attracted the attention of many researchers who tried to explain why investors are offered such high returns on the first day of the listing of a firm. Most theories argue that issuers deliberately underprice the issue and then provide various reasons why firms set the offer price below the fundamental value of the IPO. We discuss the various explanations that have been proposed after we present the empirical findings on another corporate event that is accompanied by significant abnormal returns: the Seasoned Equity Issue.

2.2.2.Announcement Period Returns for SEOs

The initial Public offer is not the only equity issue that has attracted the attention of researchers because of the large price movements associated with it. A seasoned equity issue is also characterised by significant returns on the share price of the issuer on the announcement of the issue. The share price of the issuer drops by 3% on the day the firm's intention to make the issue is made public (US studies).

The area of seasoned equity issuance has not been researched internationally as intensively as the area of IPOs. Therefore, the main empirical findings refer to the US. Nevertheless, all studies that look at the announcement of SEOs report a significant drop on the announcement of the issue. Bayless and Chaplinsky (1996) report an average drop on the announcement of the SEO of 2.3%. Choe, Masulis and Nanda (1993) report an average drop of 2.62% with 75% of all issuers experiencing negative returns. Asquith and Mullins (1986) find that the announcement period returns is a negative and highly significant -2.7%. The same percentage is reported by Jung, Kim and Stulz (1996) while Masulis and Korwar (1986) report the most negative returns of -3.25% and Lucas & McDonald (1990) report a negative price reaction of 3% on the announcement of a SEO. Levis (1994) finds that the share price of issuers drops by 1.5% on the announcement of rights issues in the UK. Shah (1996) also examines Rights issues made in the UK and finds that the announcement is accompanied by a drop of 1.63%

As with the IPOs, the magnitude of the negative returns on the announcement of the SEO varies according to the issuers' characteristics. Issues that are used to fund investments have higher returns than issues used to repay debt or issues that are used to aid the financial restructure of the company. Among all the issuers characteristics, those that can be used as measure of the firm's growth opportunities have attracted the most attention. Myers & Majluf (1984) argue that the drop should be less negative if the investment opportunities available to the firm are high. High growth firms should have less negative price reaction relative to low growth firms. Barclay & Litzenberger (1988) find a weak relation between Tobin's Q and the market reaction to equity announcements. Pillote (1992) and Dierkens (1991) find that when the growth opportunities are high, the announcement day returns are less negative. Jung, Kim and Stulz (1996) exhibit that firms with high Q ratios and high market to book values experience a smaller drop on the announcement of the seasoned equity offer. The growth opportunities are not the only factors that can affect the magnitude of the announcement period returns. The size of the issue also affects the magnitude of announcement period returns but the literature provides contradictory results. Asquith & Mullins (1986) find that larger issues are characterised by more negative returns and so do Bayless & Chaplinsky (1996) but Denis (1994) finds an insignificant relation between size and returns. Firms that make a SEO experience a large price run up in the period before the announcement. Masulis & Korwar (1986), Denis (1994) and Choe, Masulis & Nanda (1993) find that firms with high price run ups have more negative returns but Asquith & Mullins (1986) and Shah (1996) find the opposite.

Many theoretical explanations have been proposed for the price drop on the announcement of the SEO. Some of them are related with the explanations for the significant price drop on the announcement of a takeover bid that is financed with equity and so we analyse them together later on in this chapter after we present the evidence on the market reaction to the announcement of a takeover bid that is financed with equity.

2.2.3. Announcement period returns for takeover bidders.

Apart from the announcement of a SEO, other corporate announcements are followed by significant price changes. Among them is the announcement of a takeover bid. Studies that look at the bidders' returns on the announcement of the bid find that zero or negative returns accrue to bidders' shareholders. Servaes (1991) reports a significant drop of 1.07% on the share price of the bidder from the announcement day of the bid until the effective day of the takeover or the delisting date, whichever comes first. Firth (1980) finds that bidders in the UK in the period from 1969 to 1975 have significant negative return on the month of the announcement of the bid. Successful bidders experience a drop of 6.0% and unsuccessful bidders have a slightly larger drop of 6.3%. Sudarsanam and Salami (1997) finds that the share price of the bidder drops by 2.0% in the period 5 days before up to 5 days after the takeover bid announcement.

The method of payment has a significant effect on the magnitude of the announcement period returns. Servaes (1991) finds that the average cumulative return between the announcement day and the delisting or approval day for 142 takeover bids financed with equity is -5.86% while for 172 bids that were financed with cash the returns were +3.44%. In 66 bids where a mixture of cash and equity was used the average cumulative abnormal return was -3.74%. Eckbo and Langhor (1989) find that takeover bids in France that are financed only with cash have a positive impact on the price of the bidder while bids financed with equity have a negative impact . Travlos (1987) finds that the announcement period returns for cash offers is 0.24 % not significant from zero and for equity offers the return is -1.47% which is highly significantly different from zero. Travlos (1987) also finds that the two day cumulative abnormal returns were more negative when the proportion of the transaction funded through shares is high. Amihud, Lev and Travlos (1991) report that equity offers have significant negative returns of -1.19% and cash offers have a return of +0.44%. Brown & Ryngaert (1991) find that equity offers have an average announcement period return of -2.48% while cash offers have an average return of -0.06%. Frank, Harris & Titman (1991) document that all cash bids have a positive but insignificant effect on the price of the bidder while all equity bids reduce significantly the price of the bidder by 3.15%. Sudarsanam & Salami (1997) however report that UK takeover bids that use equity as method of payment have similar returns with bids that use other methods of financing the bid.

There are a number of alternative explanations for the adverse price reaction on the announcement of the takeover bid and especially what forces are responsible for the significant differences in the announcement period returns of cash and equity financed takeover bids that are closely related with the explanations of the price drop on the announcement of a SEO and are discussed next.

2.3. ABNORMAL RETURNS AND EXPLANATIONS

The significant share price movements that we described above have attracted the attention of a large research effort which tried to find the driving forces behind these phenomena. Various explanations have been proposed but only a few of them have been backed up by empirical results and can explain in a unified framework what happens to the share price of an equity issuer or a bidder that uses equity to finance the bid. In the next lines we make a reasonably extensive presentation of these explanations and evaluate the evidence against or for them.

2.3.1 IPOs and Theories on the First Day Returns.

One thing that is considered a fact in the world of finance is that managers have better information about the firm they manage relative to outside investors. They possess more and of better quality pieces of information concerning the value of the firm's assets, its future projects and in general anything that can have an impact on the value of the firm. Outside investors on the other hand, get regular information about the firm from information releases such as earnings and dividend announcements, balance sheets and other sporadic news announcements. These news however may be outdated at the time they reach the market and may not reveal the whole picture of the value of the firm that can be known with accuracy only to managers. Therefore, outside investors are at a informational disadvantage relative to managers in estimating the true, intrinsic value of the firm. When this information asymmetry is small and investors know almost as much as managers do, they can estimate with greater accuracy and confidence the true value of the firm.

The level of information asymmetry becomes immensely important when the firm wants to raise equity capital. Managers have the incentive to use the inside information they have in order to minimise the cost of their capital. They have reasons to price the new issues at the higher price possible in order to raise more money from the issue. If managers act in an attempt to minimise their cost of capital, a high price for the IPO will result to more money being raised with the same number of shares sold or a smaller portion of the firm sold to raise the required funds relative to an IPO with a low price.

Information asymmetries however do not exist only between managers and outside investors but between investors as well. Rock (1986) argues that there are investors who are more informed than others creating two groups: the informed and the uninformed investors. Uninformed investors are at a disadvantage relative to informed investors over estimating the true value of the new issue. The former group of investors will not be able to determine the true value of the issue while the latter group will be able to determine whether the issue is fairly priced or even underpriced.

The existence of information asymmetries and the motivation of managers to overprice the equity issues may be responsible for the abnormal returns we observe around equity issues. In the case of an Initial Public Offer, uninformed investors can not estimate whether the issue is overpriced or not and bid heavily for all issues. Informed investors can evaluate whether the issue is overpriced or not and participate heavily only in the undervalued issues. If the issue is oversubscribed a rationing will take place and each investor will only get a percentage of the shares he/she demanded. This creates the *winners curse* problem. Uninformed investors get all the shares they demand because these shares are overvalued and informed investors do not bid for those. On the other hand, since informed investors bid heavily only for undervalued issues they will get a large percentage of undervalued issues while uninformed investor will only get a small number of undervalued shares. Uninformed investors are the losers in this "game". They end up with the overvalued issues while informed investors end up with the undervalued issues Therefore, issuers, in order to encourage uninformed investors to participate in the issue have to "leave some money on the table", to underprice the issue , hence the large first day returns. This underpricing will compensate uninformed investors for their lack of knowledge of the intrinsic value of the firm and it will also compensate informed investors for the cost they pay for collecting and analysing the information they get about the issuer.

The strongest empirical support for Rock's (1986) model comes from Michaely & Shaw (1994). They look at the first day returns of Master Limited

Partnerships IPOs where informed institutional investors do not participate[2] and find that their average first day returns are very low and not different from zero. Therefore in MLPs there is no possibility that uninformed investors are at a disadvantage relative to informed investors and there is no need to underprice the issue to attract their attention. According to Michealy & Shaw (1994) findings, the first day returns of MLPs are not significant different from zero.

According to Rock's (1986) model, in issues when there is less uncertainty about the true value of the issuer, the first day return should be lower. If uninformed investors are less uncertain about the true value of the IPO then managers do not have to leave as much money on the table as in IPOs when the uncertainty is high. Carter & Manaster (1990) argue that the riskiness of the IPO also affects the underwriters. Most prestigious underwriters choose the least risky IPOs. Therefore, IPOs underwritten by the most reputable underwriters are less risky and should have smaller first day returns something which is supported by a number of studies. Carter & Manaster (1990) ,Michaely & Shaw (1994) and Carter, Dark & Singh (1997) find that IPOs underwritten by the least prestigious underwriters have higher first day returns. Other factors that could also be used as proxies for the uncertainty that surrounds the intrinsic value of the IPO have been found to affect the first day returns. Firms which are small, young and with small issues are regarded as ex-ante more risky and are characterised by higher first day returns. Ritter (1984) finds that firms with small sales have higher returns while Beatty & Ritter (1986), Levis (1993) ,Mauer & Senber (1992) find that smaller issues have higher returns. Mauer & Senber (1992) reports that older firms are characterised by lower first day returns. The Rock's model however has not escaped criticism because it does not answer why firms want to attract uninformed investors and pay such a big cost and why institutional investors bid not only for undervalued issues but for overvalued or fairly priced issues as well.

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[2] The reason behind the non-participation of institutional investors in MLP IPOs is that the income received from the MLPs is classified as unrelated business income and tax has to be paid on this income even from non-tax paying entities such as pension funds.

The existence of information asymmetries and overvaluation exploitation is not the only theory put forward to explain these abnormal returns. A large number of alternative explanations have been proposed. Another theory argues that the large first day returns are imposed by the underwriters who deliberately exercise their bargaining power and set the offering price at a low level to ease their marketing efforts to sell the issue. Even though that might be a practise followed by underwriters in some cases it can not explain why even financial firms and investment houses that go public are characterised by significant positive first day returns. Muscarella and Vetsuypens (1989) find that investment banks that went public have a significant average first day return of 7%.

Another theory argues that underwriters deliberate underprice the IPOs to avoid lawsuits from investors. If firms however underprice IPOs to avoid lawsuits then the cost of this avoidance is gigantic relative to the possibility of being sued and the damages that firms might have had to pay in the case of successful prosecution. Keloharju (1993) documents that in Finland there are no law suits against firms that went public in 1984 to 1989 but Finish IPOs exhibited an average first day return of 8.7% According to our findings, more than £ 70 billion were raised from IPOs in the period 1981 to 1996 in the UK excluding privatisations, and the average first day return was 12.72%. If the underpricing was an attempt to avoid being sued then firms had paid almost £ 9 billion to avoid that possibility. Definitely that is a very high premium to pay to avoid being sued and law suit avoidance does not seem that can fully explain the larger first day returns.

Ibbotson (1975) suggested that firms may deliberately underprice the IPO to "leave a good taste in investors mouth" because they want to make further issues later on at more favourable prices. If that happens then firms are likely to issue small amounts of capital in the IPO and raise more funds in the SEOs which will have to be made after a short period of time. Jegadeech, Weinstein & Welsh (1993) however find no relation between first day returns and the probability to make a SEO afterwards. Levis (1993) does not find that UK IPOs with high first day returns make larger SEO issues afterwards but he also finds that IPOs with high first day returns make a SEO quicker than firms that had small first day returns. Michaely & Shaw

(1994) find that firms that underprice more tend to reissue less often and for smaller amounts than firms with small underpricing.

The large first day returns do not necessarily mean that they are caused by deliberate underpricing. Managers may price the issue at prices which are very close to their intrinsic value. Market overreaction may push the prices at level above the intrinsic values creating the large first day returns.

Whatever the reasons behind the large first day returns are, one thing is widely accepted. The large first day returns represent an additional cost to the issuer. Rational managers who want to minimise their cost of capital would like to have the smaller underpricing. The large first day returns are not constant across time. They are characterised by significant time series variation and there are some periods when the average first day returns soar. If managers care about the magnitude of underpricing and want the IPO to have the lower possible underpricing then periods of high returns should be periods when the IPO activity should be low. The relation between IPO volume and underpricing has been previously investigated with mixed results. This issue is being reviewed later on in this chapter when we look at the factors that might drive the IPO activity.

2.3.2 Explanations for the Announcement Period Returns for SEOs

As we saw earlier, the announcement of a SEO causes the share price of the issuer to drop by 3% on average (US studies). A large research effort has been undertaken to try and explain that significant price reaction. This section presents the competing theories and weighs the empirical evidence that support them.

The equity issue increases the number of shares that are available to investors and according to the supply and demand law, if demand stays the same, the increase in the supply should cause a reduction in the price. This theory which is called the price pressure, has been proposed as an explanation for the price drop on the announcement of the issue and relies on the assumption that each security is unique and no close substitutes exist. That assumption however contradicts the theory that the demand curves for stocks are horizontal and share prices are determined by the risk return relation they offer. This theory has received criticism for two more points. First, it can not explain why issues that are made to fund investments and acquisitions have less negative price reactions than issues made to repay debt. Two issues that have the same relative size should create the same negative return no matter what the use of the proceeds is. The literature however provides evidence that issues made to reduce debt have significantly worst announcement period returns than issues made to finance future growth. Second, according to the price pressure theory, large issues that increase the supply of shares by larger percentages should have more negative impact on the share price of the issuer. Dennis (1994) however, finds that the relation between the relative size of the issue and the announcement period returns is negative but insignificant. Asquith & Mullins (1986) find that the ratio of the amount of capital raised over the market value of the common stock in the period 1963 to 1981 is negatively and significantly related with the announcement period return, thus supporting the price pressure theory. Jung et all (1996) however by using the same variable as Asquith & Mullins (1986) but for a sample of issues made from 1977 to 1984, find a positive but insignificant relation between the size of the issue and the returns on the announcement of the issue creating doubts as to whether the price pressure theory can explain the significant price declines on the announcement of the SEO.

The equity issue has a significant impact not only on shareholders but to debtholders as well. The equity issue can reduce the bankruptcy risk thus offering to debtholders a better risk return relation with a resulting increase in the debtholders' wealth. The debtholders have priority over the shareholders over the assets of the firm in case of a bankruptcy. Shareholders can satisfy their claims only after the debtholders get paid. An equity issue reduces the risk that debtholders will lose money in case of a bankruptcy since more equity will be available to satisfy their claims. An equity issue should leave the debtholders better off. In case of a bankruptcy, the shareholders' claims are the residual of what is left after the debtholders claims are satisfied. So, what the debtholders gain must represent a loss to the equity holders, hence the market reacts negatively to the announcement of a SEO. As with the price pressure theory however, according to the debt-coinsurance theory, larger issues should create a larger transfer of wealth from shareholders to debtholders and so should cause more negative reaction which as we saw earlier has not gathered overwhelming empirical support.

Managers may not always pursue the interests of their shareholders but sometimes they place their personal satisfaction higher than that of the firm's shareholders. The agency cost theory as it is called argues that managers may seek to maximise their own utility and not that of the shareholders and may undertake negative net present value projects that enhance their own satisfaction but harm shareholders value. The issue of debt on the other hand places constraints on managers and makes it more difficult for them to undertake projects that harm the value of the firm. Whenever the market perceives that managers may use the proceeds to engage in such value destroying actions it penalises the issuer with a mark down on the share price to reflect the potential reduction in the firms value that will be caused by the agency costs.

The most widespread theory is the one that is based on information asymmetries and managers' incentives to exploit the superior information they have over the true value of the firm relative to outside investors. Managers can estimate whether the current price of the share is higher than its intrinsic value. Under the assumption that managers seek to maximise their shareholders utility and that the new shares will be purchased by new shareholders, the firm will be better off to make an issue when the share price is overvalued. More capital can be raised in such a situations with a smaller portion of the firm's ownership lost to new shareholders. Outside investors are aware of managers' incentives and since they are not able to distinguish the overvalued from the undervalued issuers, they perceive an equity issue as an attempt to exploit overvaluation and hence they mark down the share price of the issuer. According to the information asymmetry models, when there is less information asymmetry about the value of assets or when there are less concerns that the issuer exploit overvaluation the drop on the announcement should be smaller or even a positive return should occur. Evidence from other studies indicate that issuers which are less likely to exploit overvaluation, such as the firms that have high growth opportunities, have less negative price reactions. On the other hand, issuers that are more likely to be overvalued such as issuers with large pre announcement price run-ups have more negative announcement period returns.

Probably the most cited model that can explain the negative price reaction on the announcement of a SEO is the one developed by Myers and Majluf (1984). Their model argues that there is a pecking order in the financing choices and manages will first consider the use of slack to finance the projects followed by the use of debt when the slack is not enough. They argue that firms issue equity only when the share price is overvalued. When there is information asymmetry between managers and investors about the value of assets in place, the former have the incentive to exploit overvaluation and issue when the price of the share investors are willing to pay is higher than the true value of the firm. Investors are aware of managers' incentives and mark down the share price of the issuer at the announcement of the issue to take into account that overvaluation.

Lucas & McDonald (1990) argue that undervalued firms, which are the firms that have good information to announce that will push their share price up, will not issue upon receiving a project. These firms would be better off waiting and issuing after the mispricing is corrected. Overvalued firms, which are those that the revelation of new information will reduce their share price, issue equity upon receiving a project. So, only firms with bad news issue equity since firms with good news will wait and issue after the announcement of these news. Their model can explain why we observe a significant drop in the share price of a firm that announces a seasoned equity issue. They argue that firms with rising share prices accumulate projects because these firms would not issue until the continuous rise comes to an end. So, firms that have high excess returns prior to the issue accumulate projects. The market is aware that firms with successive rises in the share price are sure to have a project and so the decision to issue equity does not reveal the sudden arrival of a new good project but that managers are expecting that the value of assets will fall in the future and that moment represents the best time for the firms to issue and so they mark down the share price of the issuer.

Information asymmetries between managers and investors do not exist only about the true value of assets but for the future earnings as well. Managers are aware of how the profitability of the firm will be in the near future while investors estimate the level of future earnings by relying on information releases which may not always incorporate all the information possessed by managers. Miller and Rock (1985) argue that managers that expect a decrease in earnings will be better off to make an equity issue before the decrease in earnings is revealed to the market. According to them, equity issues alter the leverage ratios and changes in leverage signal similar changes in the future earnings. An increase in leverage indicates an increase in future earnings while a decrease in leverage suggests a decrease in earnings. Therefore, investors regard an equity issue as a signal that the future profitability of the firm is in danger. The strongest empirical evidence that support that argument comes from Brous (1992) who finds that financial analysts regard an equity issue as a turning point in the profitability of the firm. On the month of the announcement of the issue, analysts revise downwards their forecasted earnings per share, a trend that continues for 3 months after the issue. Brous (1992) finds a positive relation between forecast revisions and the price drop on the announcement of the issue indicating that firms with negative forecast revisions have more negative returns..

Overall, the market reacts adversely on the announcement of a SEO. Firms that make a SEO lose around 3% of their market value in a period of just 2 days. That drop represents an indirect cost for the issue that can sometimes exceed the direct costs of the issue and can wipe out a large percentage of the proceeds of the issue. According to Asquith & Mullins (1986), the drop on the announcement of a SEO wipes out 31% of the proceeds of the issue. As with the IPOs, where issuers would like to see the lower first day return for the issue, in the case of SEOs the total cost of the new issue will be significantly lower if the issuer suffers a small price drop on the announcement. The literature has provided evidence that the magnitude of the adverse selection costs are important in the timing of equity issues. More capital is raised when adverse selection costs are low. That issue however refers to the timing of equity issues which is the last stylised fact that we discuss in the last part of this chapter.

2.3.3. Takeover Bids and Explanations for their effect on the share price of the bidder.

The market reaction to the announcement of the takeover bid is dependent on numerous factors that are related to how the market views the proposed takeover will affect the profitability of the bidder. A larger number of synergistic gains may arise from a merger. When investors think that positive synergies can arise from the takeover then obviously a positive response is expected. If the potential gains from the merger are not significant or even non-existent, then the market might react adversely. It is not in the objectives of this issue to explain the price reaction on all takeover bids. We focus our attention to the bids that are financed with equity in whole or in part. The literature has provided evidence as we saw earlier that equity financed bids have a significant negative impact on the share price of the bidders while cash offers have a non-negative impact.

A number of explanations have been proposed to explain the difference in the announcement period returns of equity and cash offers. One could argue that the difference in the announcement period returns may be due to a difference in the characteristics of equity and cash financed bids. Previous empirical studies suggest that hostile bids are financed with cash and friendly bids are financed with equity.

As with the SEOs, the price pressure theory argues that the drop is caused by the increase in the supply of shares that will result from the equity financed bid. Since the demand for the shares stays the same according to the supply and demand law, a drop in the share price of the bidder is observed. The use of cash on the other hand does not cause an increase in the supply of shares and so no negative returns should be expected. According to the price pressure theory, in cases when the target is large relative to the bidder a larger price drop for the bidder should be observed relative to bids where the target is small relative to the bidder. The acquisition of large targets should require a larger issue of shares and therefore should increase the supply of shares by greater percentages which according to the price pressure theory should have more negative returns. Servaes (1991) however finds that the size of the target and the bidder are positively related to the announcement period returns.

Travlos (1987) finds a negative relation between the relative size of the target in relation to the bidder but the relation is not statistically significant.

The debt-coinsurance theory could also in theory explain the drop on the announcement of an equity financed takeover bid. An equity financed takeover bid will require the issue of equity and that will reduce the bankruptcy risk of debtholders causing a transfer of wealth from shareholder to debtholders causing the share price to drop. A cash financed bid will not cause a transfer of wealth and therefore no negative reaction should be expected. As with the price pressure theory however, the evidence presented previously suggest that large targets that should require larger equity issues and therefore should transfer more wealth from the bidders' shareholders to bidders' debtholders do not have more negative impact on the bidder making the debt-coinsurance theory unable to explain the difference in equity and cash financed bids. Furthermore, Travlos (1987) looked at abnormal bond returns of firms that announced a takeover bid and found that in equity financed takeover bids the abnormal bond returns on the announcement of the bid are significantly negative and that in cash offers the bond returns are positive. If the equity financed bids result to a transfer of wealth from shareholders to bondholders then the equity bid should increase the value of the bonds. Travlos (1997) however finds evidence against that.

The most publicised reason for the drop on the announcement relies on the existence of information asymmetries between managers and investors. Managers who know that the share price of their firm is overvalued have reasons to use equity to finance a bid since that will reduce the cost of the acquisition. Suppose for example that a bidder can acquire a target by offering £1m in cash or, if the current share price of the bidder is £1, by offering £1m in shares. If managers, using the inside information, estimate that the true value of the share is £0.90 then they will be better of using equity to finance the deal. Investors and the shareholders of the target firm however are not unaware of managers' incentives and they perceive an equity financed bid as an attempt to exploit information asymmetry and overvaluation. Hence, they mark down the share price of the bidder to correct for the overvaluation.

Once more as with the SEOs, no matter what the cause for the drop on the announcement of the equity financed takeover bid is, it is clear that this adverse price reaction increases the cost of the acquisition. No study however has been conducted to see the effect of adverse selection costs on the volume of equity financed takeover activity.

2.4. Long run performance of equity issuers

Another reason why firms that make an equity issue or a takeover bid have attracted the attention of the academia is that equity issuers, both IPOs and SEOs, as well as bidders offer inferior returns to investors in the post-event period relative to a number of different benchmarks. In the next part we review the literature findings on the post-IPO, post-SEO and post-acquisition performance and discuss the potential explanations that can account for the poor post issue performance of those firms and the implications that these poor performances have on the "timing" of equity issues.

2.4.1. Post IPO Performance

Ritter (1991) was among the first to draw the attention to the performance of firms that make an IPO. He found that even investors that buy the IPO at the offer price and therefore benefit from the high initial returns, are worst off relative to investments in a number of alternative benchmarks. The 3-year average buy and hold return for IPOs was 34.47% while firms in the same industry and similar market value as the IPOs had a 3 year average buy and hold return of 61.86%. Loughran and Ritter (1995) use an even bigger sample of 4753 firms that went public in the US between 1970 and 1990 and also find that firms conducting an IPO subsequently underperform. Their results were robust to a number of alternative benchmarks. Aggrawal and Rivoli (1990) find that IPOs underperform from the closing price of day 1 to the 250 trading days after the issue by -13.73% relative to the NASDAQ index. The underperformance is -5.45% when the first day returns are included.

IPO underperformance is present outside the US as well. Ljungqvist (1996) finds that German IPOs underperform if the first day returns are not taken into account. Levis (1993) documents that UK IPO underperform for 3 years after the issue. Firms that went public in the UK in the period between 1980 to 1988 offered inferior returns to investors relative to the market value weighted, equal weighted FTA SHARE PRICE INDEX and the Hoare Govett Smaller Companies Index once first day returns are excluded. With the inclusion of the first day returns, IPOs are found to underperform only relative to the equal weighted FTA. Loughran, Ritter and Rydqvist (1994) present evidence about the post-IPO performance of 9 world markets. In 6 of them, IPOs underperform on adjusted terms and only in Japan, Korea and Sweden IPOs have performances similar to the seasoned firms.

Even though firms that go public seem to be bad performers, there are factors that affect their performance. Ritter (1991) reports that the IPO underperformance is higher for younger firms and firms that raise smaller amount of capital from the issue. Different industries have different performances with financial institution IPOs outperforming their seasoned counterparts while oil and gas IPO firms offer a 5 year underperformance of 60%.

Another important finding of Ritter (1991) is that there is a time series variation in the post IPO performance with IPOs that come into the marker in years of heavy IPO volume having worst performances than IPOs that go public in light IPO periods. The same conclusion is reached by Aggarwal & Rivoli (1990). Loughran & Ritter (1995) find that IPOs that go public in light issuance periods do not significantly underperform when market value and book to market factors are taken into account. IPOs however that went public in heavy issue periods significantly underperformed by 0.60% per month. Helwege and Liang (1997) report that firms that went public in 1983 in US, which was a heavy IPO volume year, underperform but the IPOs that went public in 1988, which was a light IPO volume year, did not underperform. Ljungqvist (1996) however, finds that German IPOs that go public in heavy IPO volume periods have similar post-IPO performances than IPOs that go public in light IPO volume periods. Levis (1993) also does not find a negative relation between the intensity of UK IPO volume and their post-IPO performance.

Overall it is widely documented that firms that go public offer inferior returns to their shareholders. Such consistent findings contradict the weak form of efficiency which states that all publicly available information should already be incorporated in the share prices so that nobody can make abnormal profits. By looking at the Post-IPO returns it is clear that nobody should hold a portfolio of newly listed firms since they will lose money. Investors that have bought the IPO at the offer price should sell them at the first months while the price is still high and not keep the IPO for a long period of time. The literature is not short of explanations for such an abnormal pattern and we discuss them after the documentation of the long run performance of two other groups of firms that also offer bad returns to their shareholders: the SEOs and the bidders.

2.4.2 Post-Issue performance of Seasoned Equity Issuers.

Poor performance is not a characteristic only of Initial Public Offers. Loughran & Ritter (1995) report that firms that make a Seasoned Equity Offer underperform for up to five years after the issue. Their sample of 3702 SEOs made by firms listed on NASDAQ, AMEX and NYSE for the period 1970-1990 had a 3 and 5 year buy-and-hold returns of 15.0% and 33.4% respectively while the returns for the firms within the same industry and similar market to book values were 48.0% and 92.6% for the same period. The underperformance of SEOs was robust to various benchmarks used which allowed for book to market, size and industry effects and it was not due to long term reversals or due to higher risk of SEO firms after the issue. Asquith and Mullins (1986) also find that firms that make a SEO underperform after the announcement day. By the end of the day 480 after the announcement, cumulative excess returns were -23.1%. Spiess and Affleck-Graves (1995) document a significant underperformance for Seasoned Equity Offerings during the period 1975-1989 for a sample of NASDAQ and NYSE/AMEX stocks. In the 36 months after the issue only 3 months had positive average monthly adjusted returns two of which were the first two months after the issue. The cumulative average size adjusted returns were -39.36% for the five years and -31.24% and -30.99% for the industry/size and book to market/size adjusted returns for the same period. Shah (1995) finds that firms that make a rights issue in the UK underperform by 38% relative to the FTA share price index 3 years after the issue announcement.

As with Loughran & Ritter's (1995) findings for IPOs, younger and smaller firms that make a SEO seem to do worst. Firms with high book to market did better than firms with low book to market but they still underperformed. Nearly all industries underperformed with only financial institutions and Airlines doing better than their matching sample. The magnitude of the SEO underperformance was related to the intensity of SEO activity with SEO firms that make the issue in periods of heavy activity having significantly negative returns for the 60 month after the issue while firms that issue during light volume periods do not have significantly negative returns for the 5 years after the issue. Ritter (1991) also reports a significant variation in the post-SEO performance of different industries.

Overall, firms that make SEOs experience a long run underperformance following the announcement of the issue. The reasons for this poor performance have been investigated previously and the most accepted ones rely on the notion that issuers exploit windows of opportunity when capital can be raised in more favourable terms. These explanations are related with the explanations for the poor long run performance of IPOs and are presented after we present the findings on the poor long run performance of bidders which indeed also exhibit underperformance.

2.4.3 Post-acquisition performance of bidding firms.

As with Seasoned Equity Offer and Initial public offers, firms that make a takeover bid have been found to underperform. This issue however is still in dispute because some studies have found insignificant underperformance or even outperformance for the consolidated firms. In addition to that, the magnitude of the underperformance is much smaller than the underperformance of firms making a SEO or an IPO.

Aggrawal, Jaffe & Mandelker (1992) find that after adjusting for the size effect and beta risk, acquiring firms' shareholders experience a significant 10% loss over five years after the acquisition. Average Abnormal returns were found to be negative for each one of the 5 years following the completion of the bid. Cumulative Average Abnormal returns were negative from the first year and became more negative and significant as the period after the event increased. 5-year Cumulative abnormal returns were negative , 10.26%, and significant at 5% level and were not driven by outliers. The percentage of bidders that underperformed was 56.03%, significantly higher than the percentage of bidders who outperformed at 1%. 5-year cumulative median returns were less negative ,-7.51%, but were also significantly different from zero. Aggrawal, Jaffe & Mandelker (1992) also find significant differences between the performance in the seventies and other decades. Cumulative abnormal returns were significantly negative in the fifties, sixties and eighties but positive, insignificant though, in seventies. Using data for the period between 1975 and 1984 they reported no significant underperformance a result consistent with Franks, Harris and Titman (1991). Asquith (1983) finds that both successful and unsuccessful bidding firms have a significant underperformance of 7.2% and 9.6% respectively until 240 days after the final outcome of the bid.

Frank, Harris & Titman (1991) examine post-acquisitions performances after adjusting for risk. They are particularly concerned that using a wrong or inefficient benchmark can lead to results that do not represent the reality. Abnormal performances can be sensitive to the choice of benchmarks. They use not only the CRSP equally and value weighted indexes to calculate the abnormal long run performances , but two more benchmarks. A ten-factor benchmark provided by Lehnan and Modest (1987) and an eight-portfolio benchmark developed by Grinhlatt and Titman (1988,1989a) which consists of four portfolios based on firm size, three based on dividend yield and one based on past returns. The eight-portfolio benchmark was designed to eliminate biases in the traditional benchmarks.

Comparing the post-acquiring performance of bidders with different benchmark portfolios yielded different results. The Equally-weighted CRSP index produced negative post-bid performance but compared to a value weighted CRSP index, bidders had positive and significant post-acquisition performance. The eight-portfolio benchmark and the ten-factor benchmarks also produced negative but insignificant post-acquisition performances. Frank, Harris & Titman (1991) show that using alternative benchmark to calculate post-acquisition abnormal performance, the bidders do not underperform,

The two multifactor benchmarks showed that there were not statistically significant differences between the post-bid performance when the bid was opposed by the management of the target or not and even when the bid was contested by other bidders or not. The use of equally and value weighted CRSP benchmarks however produced significant results between the previous groups (cash vs equity, opposed vs unopposed, contested vs uncontested) with cash offers outperforming the equity offers and contested and opposed bids outperforming the uncontested and unopposed bids respectively. In conclusion, Frank at al.(1991) believe that the post-acquisition underperformance that others have found is due to benchmark errors and not due to overpricing at the time of the announcement. Using multifactor benchmarks, bidders exhibit no significant negative post-acquisitions performances. Frank & Harris (1988), as with Frank, Harris & Titman (1991) find that the post-takeover performance is highly sensitive to the method used to calculate excess returns. They report however that bidders have a 2 year underperformance of 12%

Firth (1980), reports that abnormal returns after the bid announcement do not deviate significantly from zero. Three years after the bid announcement cumulative abnormal returns have remained virtually the same both for successful and unsuccessful bidders. Lodefer & Martin (1992), make another attempt to solve the puzzle of post-acquisition performance. Their results showed that acquiring firms experienced significant negative performances in the second and third year after the merger. Parametric tests revealed negative performances as well but marginally significant. The first, fourth and fifth years after the bid had positive but insignificant performances. The underperformance was higher in the period 1966 to 1969 relative to the seventies and eighties. In fact seventies and eighties never had a significant 3-year underperformance and 5-year performances were positive. In conclusion, they argue that the negative 3-years performances they found, which were insignificant after the sixties, support the efficiency market hypothesis since after 1970 the market appears to value the profitability of a merger more realistically and no underperformance is observed thereafter. Breadley, Desay & Kim (1988) examine unsuccessful tender offers and their effect on shareholders wealth. They find that for the period 1963 to 1980 unsuccessful bidding firms experienced marginally insignificant negative post-acquisition returns of -7.85% in the period up to 180 days after the announcement of the tender offer.

Significant variations in the post-takeover performance exist according to the method of payment. Frank, Harris and Mayer (1988) report that bidders that financed the bid with equity have significant negative abnormal returns for up to 2 years after the issue. Frank, Harris and Titman (1991) also find that the equity financed bids have negative monthly returns in the 36 months after the takeover but again different benchmarks produced different results with some producing significant negative performances and other insignificant ones. The difference in the monthly returns between all cash and all equity bids ranged from 0.44% to 0.72% per month according to the methodology used to calculate abnormal returns and the test statistics were from 1.37 to 2.57.

In summary, the evidence regarding the post-acquisition performance of bidders is contradictory. A larger number of studies have shown that bidders underperformed significantly after the bid. A few studies have suggested that there is a small, insignificant though, underperformance. The method of payment seems to have an impact on the long run performances with equity offers having worst performances than cash offers. The difference between the cash and equity offers is puzzling especially A number of theories have been developed to explain that difference that rely on the existence of information asymmetries and the managers incentives to exploit overvaluation when they use equity to finance a bid. These theories are closely linked with the theories that can account for the poor long run performance of IPOs and SEOs and analysed in more detail in the next part.

2.4.4.Theories of Underperformance

Even though almost everybody agrees that firms that make an IPO, a SEO or a takeover bid underperform there is little consensus as to what causes this underperformance and what implications that has on the market efficiency. The main question asked is whether the post-announcement underperformance is artificially created by insufficient asset pricing model who do not take into account the changes in the riskiness of the assets in the post-event period or is the post-event underperformance a result of a careful timing of the issues at periods when investors pay prices which do not reflect the intrinsic value of the firms.

Numerous methodologies have been used in the calculation of long run performances for IPOs, SEOs and Bidders. The overwhelming majority of those produce a significant underperformance especially for IPOs and SEOs. Of course, nobody can not discount the possibility that in the future more sophisticated asset pricing models will be developed that may prove today's researchers wrong. Until such development materialise, we can not accept that the long run underperformance is due to measurement errors.

The most accepted explanation that the literature has provided relies on investors' irrationality and market imperfections such as information asymmetries. The cognitive bias theory argues that the long run underperformance is caused by investors who overweigh the improvements in recent operating performances of issuers. Investors believe that this improvement will continue in the future and the high expectations they have push the share prices above their fundamentals. As investors' expectations do not materialised, a mark down of the share prices of the issuers occurs causing the underperformance.

Mikkelson and Shah (1994) and Jain and Kini (1994) find that firms that make Initial Public Offers are characterised by an improvement in their operating performance in the years before the IPO and a deterioration in their operating performance after the IPO. Toeh, Welsh and Wong (1998) argue that firms conducting an IPO and a Seasoned Equity Offer manipulate their earnings before the listing or the announcement of the SEO. They report that managers inflate their earnings by taking positive accruals. Loughran & Ritter (1997) report that firms making Seasoned Equity Offerings have a deterioration in their operating performance after the issue. They argue that firms may time the equity issue in periods around peaks of their operating performance. Loughran & Ritter (1997) conclude that such patterns indicate that equity misevaluation is an important determinant of corporate financing choices. Rajan & Servaes (1997) find financial analysts overestimate the growth potential of IPOs showing the presence of cognitive bias.

So, investors may pay high prices for the IPOs because they extrapolate the post-IPO performance from the Pre-IPO operating performance. Investors overestimate the growth potentials of firm conducting an IPO or a SEO and therefore overpay for the issue. Investors who incorrectly assume that this improvement is fundamental and is going to continue after the IPO, are paying high prices for the IPOs and SEOs. When investors realise they were wrong, issuers underperform.

The cognitive bias theory can explain why firms underperform but does not explain the time series variations in equity volume. The fact that equity issuers underperform after the issue does not necessarily mean that issuers deliberately time the equity issue when their share price is overvalued. It also does not indicate that variations in equity issuance volume is driven by overvaluation exploitation. If firms deliberately time their issues when prices are above their fundamentals then we should see that periods of heavy volume should be periods when issuers can achieve more overvalued prices. As a consequence of the higher degree of overvaluation in heavy volume periods, these issuers should have worst post-issue performances relative to issuers that make the issue in light volume periods, periods during which issuers should be less overvalued.

Loughran & Ritter (1995) find evidence supporting the above proposition. They find that the post-issue return of IPO and SEO firms are significantly negative when the firms make the issue in heavy volume periods while the post-issue returns of IPOs and SEOs that make the issue in light volume periods are not significantly different from zero. Evidence in favour of overvaluation timing is also found by Helwege and Liang (1997) who report that firms that went public in 1983 in US, which was a heavy IPO volume year, underperform but the IPOs that went public in 1988, which was a light IPO volume year, did not underperform.

The international evidence on that issue however are not supportive of overvaluation timing. Ljungqvist (1996) finds that German IPOs that go public in heavy IPO volume periods have similar post-IPO performances than IPOs that go public in light IPO volume periods. Levis (1993) does not find a negative relation between the intensity of UK IPO volume and their post-IPO performance.

The overvaluation timing however has not escaped criticism. Probably the strongest evidence against the overvaluation timing theory comes from evidence on the post issue underperformance of rights issuers. The method of rights issue diminishes the incentives to exploit new shareholders for the benefit of existing ones. There is no extra benefits for the firm that makes a rights issue to time the issue when the shares are overvalued. Therefore, overvaluation exploitation can not explain the poor long run performance of rights issuers and the variation in the rights issue volume across time.

Bidders also offer inferior returns to their shareholders after the announcement or the completion of the merger. The reason for such a disappointing result are many. The acquisition may not fit in the general strategy of the bidders and the target may no really create value for the bidder. Bidders' management may overestimate the potential synergies that arise from the merger but these synergistic gains may never materialise. In some case the acquisition may create value for the bidders but the implementation and consolidation process of the takeover may take too long, it may not have been thoroughly planned and checked and may destroy some or all the potential profits from the bid. The managers that are responsible for implementing the takeover may not be aware of the bidders' long term strategy and acquisition aims or the target firms' management and staff may be incompetent, not integrate well with the bidder and may have significant attitude and cultural differences from the bidders' management. No previous acquisition experience and lack of knowledge of the industry of the target may also create additional problems. Overall, many factors can attribute to the poor long run performance of bidders.

However, the literature has provided evidence that there are significant differences in the performances of bidders according to the method of payment. Bidders that use cash to finance the bid do not underperform while bidders that use equity underperform. That difference is interesting and very challenging for the academia. There are evidence that bidders that use cash are hostile bids and that bids that are hostile bids generate more wealth gains especially for the target firms' shareholders. Another factor that could explain the difference in the performance of equity and cash financed bids is managers incentives to use equity when the share price is overvalued.

Overvaluation concerns could explain the difference in the performance between cash offers and equity offers. Managers have the incentive to use equity when it is overvalued to reduce the cost of the acquisition. Investors are aware of those incentives and regard the use of equity as a method of payment as a signal that the shares are overvalued. On the other hand, bidders that are undervalued will not reduce the cost of the acquisition by using shares so undervalued firms are more likely to use cash.

This thesis investigates whether the poor long run performance of bidders that use equity to financed the bid is due to the timing of the bid when bidders shares are overvalued. Equity financed bids may exhibit an underperformance but that does not automatically mean that they deliberately exploit overvaluation. As we saw, equity financed bids have different characteristics from cash financed bids. If the choice of equity as a method of payment for the takeover bid is driven only by overvaluation exploitation then periods of heavy equity financed takeover activity should be periods when the magnitude of overvaluation should be higher. Bidders that use equity to finance a bid in high volume periods should have the most overvalued shares and worst post-bid performances relative to bidders that use equity in light volume periods.

2.5. Timing of Equity Issues

The research effort has not concentrated only on the abnormal returns around or after the equity issues but has focused on the issue of "*timing*" as well. The need to study the "timing" aspect comes from the fact that the number of firms that engage in IPOs, SEOs and takeover bids varies across time. Most of the studies however look at the timing of IPOs while the timing of SEOs and takeover bids have not been researched as thoroughly. The main motivation of these studies is to explain why the number of firms going public and the amount of capital they raise from their listing vary significantly across time. Ritter (1991) reports wide variations in IPO volume in the US in the period 1975 to 1984 with 1983 having more than 57% of the total dollar volume raised in that period. Ibbotson and Jaffe (1975) report that more firms conducted an IPO during the early and late part of the 60's relative to the middle part of that decade. Levis (1993) reports that UK IPO activity is characterised by wide time series variations. Gerbich (1996) and Rees (1997), also document that there are some periods when UK IPO activity is high and other periods when the activity subsides.

Research in the US has also shown that Seasoned equity issuance activity is not constant across time. Significant variations occur in the number of firms that make a seasoned equity issue and in the amount of capital firms decide to raise. Ritter (1991), Loughran and Ritter (1995), Choe, Masulis and Nanda (1993), Bayless & Chaplinsky (1996) are only some of the studies which document that there are periods when Seasoned Equity Offering activity is high and other periods when the activity subsides. Loughran and Ritter (1995) report large variations in the number of Equity issues in the US from 1970 to 1990 with Initial Public offerings being more volatile than Seasoned Equity offerings.

The evidence about clustering of merger and takeover activity indicate that mergers and acquisitions come in waves rather than in short time variations. Golbe & White (1993) Clark, Chakrabarti & Chiang (1988). Mitchell & Mulherin (1996) found significant differences in the rate and time-clustering of take-over activity. Industries that experienced the greatest number of take-overs are those exposed to the greatest fundamental shocks. More than 50% of take-overs in a given industry cluster within a period of two years. Sudanrsanm (1995) reproduces evidence from the central statistical office that takeover activity in the UK varies across time. He also reports that takeover activity financed with shares also exhibits sigificant variations over time with more than 50% of all bids made in 1986 and 1987 being financed with equity.

Overall, we can safely conclude that the number of firms that engage in equity issues and takeover bids vary significantly over time. Such patterns contradict the efficient market hypothesis under which no corporate action can create abnormal benefits for the firm. All pieces of information, private or public, are already incorporated in the stock markets and therefore the firm can not gain extra benefits by carefully timing the equity issue. Under such a framework, variations in equity issuance volume are random and driven by rational stories of changing business conditions. More firms would make equity issues when the demand for investment is higher which is typical for periods with improving economic conditions.

A large opposition to the rational explanations of time series variation in equity issuance volume however has build up momentum since research has unveiled that equity issues are not a zero net present value corporate action. The belief of the irrational explanations is that there are "windows of opportunities" in stock markets when equity issues can be made in more favourable terms and therefore can enhance the benefits for the firms. The fundamental belief of irrational stories is that the presence of market imperfections, such as information asymmetries and variations in investors' sentiment can be exploited by equity issuers and bidders in order to minimise the cost of the capital or the cost of the acquisition.

The role that changing business conditions, information asymmetries and investors' sentiment play in the timing of equity issues is the subject of this thesis in the later chapters. First however we analyse in depth the effect that these three factors have on the timing of equity issues.

2.5.1 Adverse Selection Costs and the Timing of Equity issues

In the world of finance there is a number of market imperfections that are responsible for some of the abnormal patterns that we observe. The asymmetric distribution of information between managers and investors is one of these market imperfections. Investors do not have the same information as managers do and so are in a disadvantageous position to estimate the intrinsic value of the firm and its future prospects. Investors are aware of managers' incentives to minimise their cost of capital by selling overvalued equity and since they can not distinguish between the overpriced and fairly priced issues, they regard an equity issue as an attempt to exploit overvaluation and mark down the share price of the issuer. That creates an adverse selection problem which represents an additional cost of capital to the issuer of common stock. Managers would like to see the smaller possible drop on the announcement of the issue otherwise the loss of the market value of their firm could wipe out a large percentage of the amount of capital raised from the issue. If managers are concerned about these indirect costs then they would not issue in periods when adverse selection costs are high.

The relation between adverse selection costs and equity issuance activity has provided evidence that managers care about these costs. Choe, Masulis and Nanda (1993) find that adverse selection costs are lower when the volume of seasoned equity issues in the US is high. They argue that periods when the information asymmetry problem is not severe attract the attention of more equity issuers. Bayless & Chaplinsky (1996) also find that there are period when the volume of equity issue is high. The driving force behind that increase, is the lower adverse selection costs that issuers experience when volume is high. During the most active SEO months, adverse selection costs were -2.0%, significantly less negative form the inactive SEO months when adverse selection costs were -3.3%. Their reason for that decrease in adverse selection costs during periods of heavy volume is that during these periods information asymmetry about the value of assets is lower. More information about the value of assets is known to investors during periods of heavy volume and investors are less concerned that managers might be exploiting overvaluation.

Firms that make an IPO also face significant indirect costs. The large first day returns represent an additional cost to the issuer. According to the information asymmetry models, the large first day returns are a result of managers having to compensate uninformed investors for their lack of knowledge of the intrinsic value of the firm. Periods when more and of better quality pieces of information about the value of firm's assets are known to investors reduce the uncertainty about the intrinsic value of the IPO and reduce the first day returns. If managers do not want to "pay these significant indirect costs" then they will not make the IPO during periods when information asymmetry is acute and the required underpricing is large. On the other hand, during periods when investors' uncertainty is minimal, the underpricing should be lower. These periods should attract the attention of more issuers because the information costs that are associated with the issue during these periods are lower. In the case of IPOs, that predicts lower first day returns when the information asymmetry problem is not so acute and an increase in the IPO activity when the level of underpricing is lower.

The evidence on the relation between IPO volume and adverse selection costs is mixed. Jegadeesh, Weinstein and Welsh (1993), Michaely and Shaw (1994) do not support the story that IPO volume in the US is driven by lower underpricing. Gerbich and Levis (1996) and Gerbich (1996) however, find that the amount of capital raised from UK IPOs increases as the average first day returns of the IPOs that went public during the previous quarter decrease.

Firms that announce a takeover bid that is financed with equity also face significant adverse selection costs. The share price of the bidder drops by a significant percentage creating additional, indirect costs to the bidder. There is no empirical work however that investigates whether these indirect costs are really important for the timing of the equity financed takeover bid. If the magnitude of adverse selection costs is of paramount importance to the bidder that uses equity to finance a bid then, more equity financed bids should be made in periods when these costs are low.

Overall, the investigation of the effect of adverse selection costs on the timing of equity issues has produced mixed results. Previous empirical findings suggest that the significance of adverse selection costs is high in the timing of SEOs but has a lesser role in the timing of IPOs. International evidence on this area are scarce. Only one international study for the UK IPOs is available linking the IPO decision with the magnitude of underpricing. One of the main research motivations of this thesis is to investigate the effect that adverse selection costs have on the timing of IPOs, SEOs and takeover bids financed with equity. In chapters 5, 6 and 7 we examine whether the magnitude of adverse selection costs affects the timing of IPOs, SEOs and takeover bids financed with equity respectively.

2.5.2 Equity issues and the business cycle.

During favourable economic conditions, firms face more investment opportunities and the net present value of the project is likely to be higher. Therefore, the demand for investments is higher. One source of finance for these projects is the issuance of capital. During periods of good economic conditions stock markets are usually rising making the choice of equity as a more preferable one relative to other options such as debt. It is rational to assume that more firms would make an equity issue during periods when economic conditions are improving.

Empirical evidence support the argument that more firms make equity issues during the periods when firms face better business opportunities. Choe, Masulis and Nanda (1993) find that the ratio of common shares issued to all securities issued increases during expansions. Gerbich (1996), and Rees (1997) find a strong relation between the short leading indicator and the UK IPO activity. Hickman (1953), Moore (1980), and recently Berkovich & Narayanan (1993) also document that the number of firms that issue common stock increases when the economy is in the phase of an expansion. Berkovich & Narayanan (1993) believe that when economic conditions are improving and the expected profits from investments increase, firms are undertaking even lower quality projects. In their model they prove that low quality projects are financed with equity. Hence, we have more equity financing during expansions because in these periods firms undertake more low quality projects and these projects are solely financed with equity.

According to Choe, Masulis and Nanda (1993) however, the reason behind the increase in equity financing during the upturn of the business cycle is not simply that the demand for investment is higher but that these periods are characterised by lower adverse selection costs. During an expansion, firms face more profitable investment opportunities and the value of their existing assets is higher. Choe, Masulis and Nanda (1993) believe that there is a marginal firm of quality i* that is indifferent between issuing debt or equity because for that firm the market value of common stock held by old shareholders is the same, after the issue, whether equity or debt is issued. Firms of lower quality than the marginal firm (i< i*) issue equity and high quality firms (i >i*) issue debt. The market value of all firms is considered to be a positive function of economic conditions. Therefore, as economic conditions improve, the market value of the issuer under both the two options (equity or debt) increase by the same amount. So, the quality of the marginal firm i*, which is indifferent between the issue of equity or debt, increases. As i* increase, more firms will find themselves to be below the marginal firm. Since the firms that are below the marginal firm issue equity, the volume of equity financing increases as economic conditions improve.

Going even further, Choe, Masulis and Nanda (1993) argue that when economic condition improve and the average quality of equity issuers increase, the announcement of an equity offer signals less negative information about the value of the firm's assets. Therefore the adverse selection costs should be lower. Investors should not mark down or mark down by a smaller percentage the price of a firm that is of higher quality. Since the average quality of the equity issuer increases during the upturns of the business cycle, less negative returns should be observed at the upturn of the cycle. So, according to Choe, Masulis and Nanda (1993), during an expansion more firms resort to issuing equity because the adverse selection costs associated with the announcement of an equity issue are lower during an expansion. Along with that argument are the findings of Gerbich (1996) who finds that underpricing for UK

IPOs is smaller when the economy is in the last stage of the expansion and increases as the economy goes through a recession.

Bayless & Chaplinsky (1996) however dispute the fact that periods of low adverse selection costs are periods with favourable economic conditions. The lower adverse selection costs do not arise from improvements in economic conditions or other macroeconomic factors. Not all periods of heavy volume are periods when economic conditions are favourable. In fact, they find that there are some light volume SEO periods when the economic conditions are much better than some heavy SEO periods.

Economic conditions have an effect on the merger and takeover activity as well. Nelson(1961) finds that merger activity responds positively and consistently to the business cycle. Between 1895 and 1956, merger activity fluctuated with the business cycle. Merger peaks preceded the business cycle peaks by about ten months. Sudarsanam (1995) reports that UK takeover activity is high in 1986 to 1987, a period when the UK economy experienced an economic boom. No study however has looked as the effect of business conditions on takeover gains for bidders and particularly whether these gains vary with the business cycle. If acquisition gains for bidders are found to fluctuate across time that would indicate that there are certain periods when the market response to a bid announcement is more favourable relative to other periods. That could be a factor with great importance in the timing of mergers and acquisition.

In general, the literature has provided examples of a positive relation between the equity issuance activity and the economic conditions. Periods of more favourable business conditions seem to attract the attention of more issuers. Some of the evidence suggest that economic conditions have an impact on the adverse selection costs as well. Chapters 5, 6 and 7 investigate whether such cyclical patterns exists in the UK by looking at the IPO, SEO and takeover activity across different phases of the business cycle and the impact that economic conditions have on the magnitude of adverse selection costs.

2.5.3 Overvaluation Exploitation and Variations in Investors' Sentiment

The improvement in economic conditions and the reduction of adverse selection costs is not the only explanations that has been put forward for the variation in equity issuance activity over time. Instead of concentrating on the adverse selection costs of the issue as the driving force behind the timing of the issue, others concentrate on the more obvious costs of the issue. The timing of an IPO in periods when share prices are high will enable the issuer to raise more money from the issue. A firm will also benefit if the SEO takes place in a period when its stock is overvalued. That will result to a smaller loss of the firm's ownership by the existing shareholders and/or more capital raised from the offer. In addition, the bidder that uses equity to finance the bid also will reduce the cost of the takeover if it uses equity as a method of payment when its share price is overvalued. So, another explanation argues that firms prefer to issue shares or use equity to finance a bid when share prices are higher than their intrinsic values.

Lucas & McDonald (1990), believe that the variation in the volume of equity issues over time is caused by the fact that equity issues, on average, follow market increases. The clustering of equity offers results from bullish markets. Lucas & McDonald (1990), believe that the percentage of all firms that are undervalued in the whole economy varies across time. According to them, there are periods that the fraction of undervalued firms (firms about to release good news for their future) is higher than the average. These firms will have to wait and issue equity after that undervaluation is corrected. That rise in the share price of the "undervalued "firms will cause a general market rise. So, we see more equity issues after general market rises.

Loughran & Ritter (1995) document a significant underperformance for US firms conducting an IPO or a Seasoned Equity Offer for up to five years after the issue. These results together with the price run-up that has been documented before the announcement of the SEO, lead them to believe that firms issue when their stock is overvalued. According to Loughran and Ritter (1995) variations in equity issuance activity arise from changes in investors' sentiment. Issuers take advantage of transitory windows of opportunity during which issuers can achieve higher valuations and so issue equity when their stock is overvalued. Managers are interesting in setting the price of the offer at the higher level possible and when they identify a period during which investors are willing to overpay for new equity issues they see the opportunity and raise capital in more favourable terms. As time progresses and investors gradually realise the true value of the issues is lower, they mark down the prices of firms that have overpriced the issues creating a significant underperformance for SEO issuers. The underperformance should be higher for those firms that have the most overvalued issues. If there are periods when issuers can achieve higher levels of overvaluation in their issues then we should see that firms that raised capital in those periods must have worst post-issue performances.

If exploitation of overvaluation and sentiment timing are major driving forces of the variability of the equity issuance activity, then firms that make the issues in periods of heavy volume should have the most overvalued issues and should have higher levels of underperformance relative to the firms that make the issues in periods of light issuance activity. Loughran & Ritter (1995), report that IPOs that come to the market in periods of light volume do not significantly underperform but those IPOs that come into the market in periods of Heavy IPO volume significantly underperform. Ritter (1991) finds that the difference in 3-year total return for a firm that goes public in a low IPO volume year is 90.7% from the IPO that goes public in a heavy IPO volume year, ceteris paribus. Helwege & Liang (1997), find that firms that went public in 1983 which was a year of heavy IPO volume in the US, underperformed relative to the mean Nasdaq return. IPOs of year 1988, which was a light IPO volume year , outperformed the Mean Nasdaq return. Ljungqvist (1996) however finds that German IPOs that went public when IPO volume was high, performed better that the IPOs that went public in periods of low IPO volume. Loughran & Ritter (1995) find evidence that SEO volume is driven by overvaluation exploitation as well. They report a significant underperformance of firms that make a SEO which is indeed concentrated only on firms that make the SEO in heavy volume periods. Firms that make a SEO in light volume periods do not have significantly negative performances.

Not only IPOs and SEOs that are offered to the general public can benefit by timing the issues when investors' sentiment is favourable and prices are high. Even in the cases of rights issues, where the new shares are offered to existing shareholders and therefore managers' incentives of overvaluation exploitation are diminished, there are benefits by timing the issues in periods of high investors' sentiment. Firms that make a rights issue are not guaranteed that they will raise all the money that they need to fund their projects. Existing shareholders may choose not to exercise their rights but to sell them to the market or to the underwriter that may have underwritten the issue. By timing the issue at periods when the market sentiment is high, the issuer is more likely to make a successful issue, that is to raise the full amount of capital it requires. Investors must be more eager to participate in equity issues when the market is characterised by an optimism.

We investigate whether overvaluation exploitation is a major driving force behind the timing of equity issues in chapters 5 and 6 where we compare the post-Issue performances of IPOs and SEOs that made the issues is periods of heavy and light issuance.

The issue whether the choice of equity as the method of payment for a takeover bid is driven by attempts to exploit overvaluation of equity has not been previously researched. If bidders opt to use equity only in cases when it is overvalued, then bidders that use equity should underperform after the bid, and the underperformance must be higher during periods when more bidders resort to equity financing. Chapter 7 investigates the post-bid performance of bidders that use equity to finance the bid and the relation between performance and equity financed takeover volume.

2.5.4 .UK Evidence on the Timing of Equity Issues.

IPO activity in the UK varies over time. Gerbich (1996), Byrne and Rees (1996), Rees (1997) have looked at the UK IPO activity and tried to explain what drives the time series variation in UK IPO activity.

Gerbich (1996) links the decision to make an IPO to the adverse selection costs associated with the IPO. He believes that IPO volume is driven by lower underpricing. His findings suggest that more capital is raised from IPOs , excluding privatisations, during months when the first day returns of the IPOs that went public in the previous quarter were low. He also links the IPO activity with economic conditions arguing that during periods with improving economic conditions more IPOs come to the market in shorter day intervals.

Gerbich (1996) also reports a significant indirect relationship between economic conditions and underpricing. He does not establish however a direct link between economic conditions and underpricing to support his story that adverse selection costs are lower during the expansion phase of the business cycle. Instead, he finds that during the last stages of the expansion, the duration, which is the number of days between two consecutive IPOs , is lower than any other period of the cycle. Following that, he forms ten portfolios according to the length of the duration. The portfolio with the smaller duration has the lower first day returns. In other words, when the economy is near the peak of the cycle, IPOs are coming into shorter intervals and when IPOs come into shorter intervals first day returns are lower. Gerbich (1996) also find that rising markets and high volatility positively affect the amount of capital raised from IPOs .

Byrne and Rees (1996), concentrate in explaining the number of Initial Public Offers per month instead of the amount of IPO proceeds. In contrast with Gerbich (1996) they find that the stock market does not significantly affect the IPO activity and that the volatility adversely affects the number of IPOs that come to the market per month. They find however a strong interest rate effect. High interest rates reduce the IPO activity.

Rees (1997) investigates both the amount of capital raised and the numbers of IPOs per quarter. In contrast with the earlier study, Rees (1997) finds that the market positively affects the number of IPOs per quarter and that interest rates have no effect on the IPO activity. A strong relation between the short leading indicator and the IPO activity is also documented. When the dependent variable was the <u>amount of capital</u> raised from IPOs per quarter, excluding the privatisations, economic conditions lost their significance in explaining the IPO volume in contrast with Gerbich (1996). The level of the stock market was still positively related with the IPO volume while interest rates had no effect. In this paper however, Rees (1997) collects the data from the Stock exchange Quality of markets Survey. In his earlier paper the source was the KPMG new issues statistics. We used both databases and we find that the two differ in the day they record as the first trading day. So, the difference in the results may be due to the different sample. The econometric analysis used in the two papers is also different. In the first paper poison regression are performed while in the second ordinary least squares are used. Even the explanatory variables are different. The 6 month market return is used in the first paper while the FT All Share Price index deflated with 1990 prices is used in the second. So the differences in the results between Rees (1997) and Byrne and Rees (1996) are be due to differences in methodology or sample collection.

No studies have been done concerning the timing of UK SEOs or takeover bids that are financed with equity. This thesis, attempts to fill in the gap that exists in the literature by investigate the timing not only of IPOs but of SEOs and takeover bids as well.

2.6. CONCLUSIONS

This chapter has reviewed and evaluated the empirical findings of other studies on the three stylised facts that characterise the behaviour of firms that make an Initial public offering, a Seasoned equity offering and takeover bid. First we present the results of previous research on the large positive first day returns for IPOs and the significant negative price reactions on the announcement of the SEO and the takeover bid. Models based on avoidance of law suits and signalling quality for future issues as potential explanation for the large first day returns for IPOs have been rejected by the literature since empirical evidence do not support them. The uncertainty that surrounds the intrinsic value of the IPOs has a significant effect on the magnitude of underpricing that investors "require" in order to participate for new issues. The existence of market imperfections such as information asymmetries and managers' incentives to exploit overvaluation in equity issues is widely believed to offer the best explanation for the larger first day returns. Investors' uncertainty about the intrinsic value of the issuers has a significant effect on the issuance decision with IPO firms having to underprice the issue to encourage uninformed investors to participate. Significant price movements occur on the announcement of a SEO and a takeover bid as well. Seasoned issuers and bidders see their share price decrease by significant percentages. Theories based on the price pressure hypothesis and debt co-insurance theories fail to attract support as explanations for these price movements. Information asymmetries between investors and managers about the true value of the issuers and its future profitability and managers incentives to exploit overvaluation are the academia's favourable answer for the reasons behind these adverse price reaction.

The second stylised fact that characterises the firms make an IPO, a SEO and a takeover bid and was reviewed in this chapter is that all of them are poor performers after the event. IPOs, SEOs and bidder underperform significantly after the issue and the bid. The cognitive bias and overvaluation timing are the best explanations that the academia has provided. Improvements in operating performance of issuers in the pre-issue years and a deterioration in the operating performance in the post-issue years provide support to the cognitive bias theory. Evidence of a significant time series variation in underperformance with issuers that make the issue during heavy issuance periods having significantly worst performances than issues that make the issue in light volume periods support the overvaluation timing theory.

Finally, the third stylised fact that characterises equity issuance and takeover activity is that there is a significant time series variation in the issuance volume. While changes in business conditions and investment opportunities can provide an explanation to such a variation other theories link the volume of equity issues with the adverse selection costs that are associated with equity issues. Periods when underpricing for IPOs and adverse selection costs for SEOs are low are periods when equity issue activity is high. Most important however, the literature seems to favour the idea that issuers exploit transitory windows of opportunity when issuers can raise capital in more favourable terms windows which result from inventors' overestimation of the growth potential of issuers and extrapolation of recent operating improvements.

CHAPTER 3: LITERATURE REVIEW ON THE EFFECT OF FINANCIAL ANALYSTS EARNINGS FORECASTS ON THE TIMING OF EQUITY ISSUES.

3.1 INTRODUCTION

We saw in the previous chapter that a big part of the literature believes that equity issuers "time" the issues around periods when investors' sentiment is favourable. Such a proposition however is very difficult to be tested directly. An investigation into the effect of market sentiment in the timing of equity issues can only be conducted either by looking at ex-post equity issues anomalies or by trying to find a factor that could approximate to the market sentiment. In the first case, researchers look at the post-issue performances of issuers and try to identify first whether issuers underperform after the issue and second if there are significant differences between the performance of issuers that make the issue in heavy and light volume periods. In the second case, researchers can use proxies for the market sentiment. The problem in this case is to identify such a proxy.

A very important accounting information that is used by investors to estimate the true value of a firm is the earnings. The expected future growth in the earnings is incorporated in the current share prices. Firms that are expected to have a large increase in their earnings are likely to be priced at higher levels than firms with low earnings growth prospects. During periods of favourable market conditions the expected future growth of earnings is likely to be higher. When the market sentiment is high this optimism will have an impact on the earnings forecasts. Periods when the market is characterised by favourable conditions should be periods when analysts should be forecasting higher earnings for the firms relative to periods when the growth prospects are gloomy, ceteris paribus. Financial analysts' earnings forecasts could be used as a proxy for the market sentiment. Analysts' earnings forecasts should reflect and to some extent even affect the market sentiment.

Firms that make an equity issue stand to gain a lot by timing the issue at a period when analysts' earnings forecasts are optimistic. This optimism will be incorporated into the current share prices pushing them to higher levels. The cost of the issue will be lower when the share price of the issue is high. Managers, who rationally seek to minimise their cost of capital, will use every available opportunity and make an IPO when the market sentiment is more favourable, ceteris paribus.

The market sentiment should be important in the timing of Seasoned equity issues as well. In Seasoned Equity offerings where the new shares are offered to the general public, managers, who act on behalf of existing shareholders, have the incentive to make the issue when the share price is high. In such a case, more capital will be raised with the existing shareholders losing a smaller portion of the firm's ownership to the new shareholders. Under such a scenario, periods when the earnings' forecast are optimistic and the prices are above the fundamentals can create the conditions when the cost of new capital can be minimised.

In the UK and other countries, the seasoned equity issues are made with the method of rights issues. This is a unique method for raising seasoned equity capital because it eliminates managers' incentives to exploit new shareholders in favour of existing ones by selling to them overvalued shares, Myers & Majluf (1984). Under a rights issue, the new shares are offered first to existing shareholders. They have the *right* to buy the new shares at a prefixed price and terms or to sell their rights to another investor who wants to buy the shares or to the underwriter of the issue, if the issue is underwritten. In either way, shareholders or managers do not gain or lose anything if the issue price is high. (see endnote 1)

If managers seek to maximise the existing shareholders' utility, they have no incentive to price the new shares at dearer prices since existing shareholders will not gain or lose anything if the share price of the issue is high or low. Therefore, managers that seek to maximise their shareholders' utility have no incentive to time the issue at periods when analysts' earnings optimism is high. That is unless managers place their own satisfaction higher than that of their shareholders. Managerial compensation and personal satisfaction and fulfilment may be related to the firms size. In such a case, managers do have the incentive to issue at higher prices. By issuing at a higher price, they can raise more capital with offering the same amount of shares. If managers' personal satisfaction is ranked higher than that of their shareholders we might expect that managers may be tempted to time the equity issue when the market sentiment favours the issuance of capital at higher prices..

Firms that make a rights issue are under pressure from the underwriters to ease their marketing and selling efforts. If the new issue is priced at a high price then the probability increases that existing investors might not commit their funds to buy the new shares and therefore would prefer to sell their rights to the market. In some cases, the underwriter's obligation is to buy these rights if no other investor wants to buy them and provide the money to buy the shares that correspond to these un-exercised rights. That represents a cost to the underwriter who, in such a outcome has to commit funds to acquire and effort to sell the shares to the market. Therefore, there is pressure from the underwriters of the issuers to price the issue at low prices that will make investors participate in the issue. If however there are periods during which existing shareholders are more willing to buy the new issue, then these pressures from the underwriters may ease thus making the issue of capital easier. Certainly periods when analysts' earnings forecasts are high should be periods when investors will be more willing to participate in the issues and therefore underwriters' concerns should be minimised compared with periods with gloomy earnings' forecasts.

Even in the cases when the rights issue is not underwritten or there is no guarantee that the un-exercised rights will be bought by the underwriter, firms will be better off to time the issue at a period when earnings' forecast are high. Investors will be more eager to participate in the issue when they see that the forecasted earnings of the firms are high, reassuring firms that the they will raise all the amount that they have planned as necessary to fund their projects. On the other hand, the participation of investors on rights issues should be lower when the earnings forecasts are lower or the business environment is gloomy making the raise of the full amount of capital demanded by the firms less likely.

Overall, equity issuers have to benefit from making the issues when the market sentiment is favourable. If issuers exploit investors' sentiment in the timing of equity issues then a significant relation between analysts' optimism and the number of equity issues should exist. This issue has just started to attract the attention of those that investigate the forces behind the time series variation in the volume of equity issues. The effect of analysts' earnings optimism has not been thoroughly researched and the only studies conducted up to now have been made in the US. In the next section we present the main findings of these studies.

Several studies have documented that the operating performance of firms that make an equity issue improves in the period prior to the equity issue and deteriorates in the post-issue years. These studies look at various accounting measures at the time these figures are reported. The financial analysts' earnings forecasts are very helpful not only as a proxy for market sentiment but also because they provide the market's view of the future profitability of the firm at the time of the issue. The use of financial analysts' earnings forecasts can provide an updated view of firms profitability. Analysts' forecasts for a firm are usually available every month and so every new piece of information that becomes public is incorporated into the earnings forecasts. If the equity issue has an impact on the profitability of the issuer then that should be, either immediately or even gradually, reflected in analysts' forecasts. By looking at how analysts revise their earnings forecasts we can see how a particular corporate action such as a SEO or an IPO affects the firm profitability. If the issuers time the issues at the peak of their profitability and the timing of the issue is motivated by managers who foresee a deterioration in future performance then analysts should revise upwards their earnings forecast in the pre-SEO period and revise downwards their forecasts in the post-SEO and post-IPO period. The second part of this chapter looks at previous studies that have uncovered how analysts regard that the equity issue will affect the profitability of the issuer.

This chapter reviews the empirical findings of previous studies on the issue of analysts earnings forecasts overoptimism around the equity issues and the effect of earnings' overoptimism on the timing of equity issues. At the last part we look at the studies that have been conducted looking at analysts forecast revisions around equity issues.

3.2 Equity issues and analysts' earnings optimism

Financial analysts play a very important role in today's capital markets. In order to make an earnings forecast they gather as many pieces of macroeconomic and firm specific information they can and form an assessment of the future earnings of the firms. Investors use these forecasts to estimate the intrinsic value of the firms. Especially uninformed investors or investors who are not willing to pay the cost of gathering information which will enable them to estimate the value of the firms with accuracy rely, at least to some extent, on financial analysts' earnings forecasts in order to estimate the growth potential of companies.

Several studies have found that financial analysts overestimate firms' future earnings growth potential. Dreman & Berry (1995), report that the average forecast error is more than 20 per cent of the actual EPS. Chopra (1998) concludes that analysts forecasts of EPS and growth in EPS tend to be overly optimistic with calendarised earnings estimates overstating actual earnings by 11% at the start of the year. Brown (1997) reports that the mean consensus EPS over the absolute value of actual EPS is -31.6% . Hansen & Sarin (1998) also find that analysts overestimate the actual earnings. The evidence on analysts' overestimation of earnings is overwhelming. This overestimation however decreases as the month of the announcement of the earnings approaches. As time passes by, more information about firms' earnings become public and that make analysts to be more accurate in their forecasts. Capstaff, Paudyal & Rees (1995) find that the mean forecast error of forecasts made 20 months before the fiscal year end is 0.235 and the mean forecast error made 10 months before the fiscal year end is 0.185.

Brown (1997) reports significant variations in forecast errors for different industries. Brown (1997) also finds a negative relation between market capitalisation and the magnitude of forecast errors. Small firms are characterised by more negative earnings surprises than larger firms for which, although the average earnings surprise is negative, it is not significant from zero. Brown (1997) also reports a negative relation between the number of analyst following the firm and the magnitude of the errors. The number of analysts covering a firm however is significantly related with the size of the firm and so the effect of analyst following and market value of the firm is somehow overlapping. Hansen & Sarin (1998) find that analysts make larger forecast error when they forecast the earnings of firms with high earnings growth.

Even though analysts are overoptimistic on average for all firms, a part of the literature reports that certain groups of firms experience more than the average overoptimistic forecasts. According to Rajan & Servaes (1998) analysts are systematically overoptimistic about the growth of earnings of all firms. They are more overoptimistic however for IPOs. The forecasts analysts make during the first year after the listing for firms that went public, are significantly overoptimistic. Earnings forecasts, scaled by the share price at the time the forecasts were made, with a forecast horizon of 3, 6, and 12 months and made within one year after the IPO, were 3.36%, 4.45% and 5.77% respectively above the actual earnings. Forecast errors remained negative even when they were industry and size adjusted. The adjusted forecast errors were , -1.65%, -1.47% and -3.21% for the 3, 6, and 12 month forecast horizons respectively. Average unadjusted and adjusted forecast errors remained significantly negative even when the forecasts were made in the second year after the IPO indicating that analysts' overoptimism for firms that went public continues into the second year of their public life.

According to Rajan & Servaes (1997) , analysts are overoptimistic for the long term growth in earnings of IPOs as well (up to 5 years). When analysts forecast the long term growth in earnings of IPOs during the first 3 to 6 months after the listing they expect IPOs to have a 5% higher long-term growth in earnings, relative to firms in the same industry. When analysts forecast the long term growth in earnings of IPOs at the end of year 1 they expect IPOs to have a 3.22% higher long-term growth in earnings relative to firms in the same industry, while when the forecasts are made in the end of year 2 and 3, IPOs are expected to have a growth of 3.04% and 1.39% higher that firms in the same industry..

A few studies have been conducted investigating the analysts' earnings overoptimism around Seasoned equity issues as well. Their results however are contradictory due to the different methods used to calculate forecast errors. Dechow, Hutton & Sloan (1998) investigate the accuracy of analysts' forecasts of long term earnings made in the period of 9 months prior to and up to 3 months after the SEO announcement. They find that analysts overestimate the long term earnings by 10.6% providing support to the argument that analysts are overoptimistic for the earnings of firms around SEO announcements. They do not compare these errors however with any control group nor do they adjust them for any of the factors that have been found to significantly influence analysts' forecast accuracy.

That issue is highlighted by Hansen & Sarin (1998) who find big differences between analysts' unadjusted and analysts adjusted forecast errors. They report that the unadjusted forecast errors analysts make 6 terms prior to the announcement of the issue and up to 1 month after the announcement are significantly negative as in Dechow, Hutton & Sloan (1998). Unadjusted forecast errors are also significantly negative in the post-announcement as well, quarters 2 to +8, and of higher magnitude compared with the pre-announcement period. Hansen & Sarin (1998) emphasise however the important of adjusting forecast error for some characteristics that have a significant effect on the magnitude of analysts overoptimism. They report that analysts' errors are higher when they forecast the earnings of firms with high growth. They find that firms that make a SEO are firms with high growth and therefore the forecast errors have to be adjusted for this "growth bias". Adjusted for the growth bias, Hansen & Sarin (1998) find that analysts are not overoptimistic in the period prior to the announcement of the issue in contrast with Dechow, Hutton & Sloan (1998). Forecast errors for the current year earnings are positive and significantly different from zero in the pre-SEO period. With regards to the post-announcement period, their analysis reveals that errors are insignificantly different from zero. Similar results were obtained when they adjusted the errors for the number of analysts following the issuer or when they looked at analysts' overoptimism for the long term growth in the earnings instead of current year earnings.

The difference in the two papers is puzzling since both look at approximately the same time periods. The discrepancy however must be driven by the method used to calculate long term growth in earnings. Hansen & Sarin (1998) calculate the long term forecast error as the difference between the error made for the company and the error made for non-SEO companies with similar forecasted growth in their earnings. Dechow, Hutton & Sloan (1998) on the other hand, do not adjust their errors for any benchmark.

Ali (1995) examines SEOs for a period of 20 year and finds that the errors made for the year of the offering, after being adjusted for the I/B/E/S mean forecast error, are not significantly negative. The forecasts however that were made during the 5 years after the issue announcement are significantly overoptimistic.

The fact that analysts are overoptimistic for firms that recently went public or made a SEO has received criticism because these forecast errors could be driven by selection bias. Financial analysts that make these forecasts may be employed in a firm that acted as an underwriter of that IPO or the SEO and so these analysts may be "ordered" to overestimate the growth potentials in order to assist the issue process. Close business relations with the firms may prevent analysts from making precise and objective forecasts for them especially when those forecasts are not good. So, agency problems may cause those forecast errors. It may even be that underwriters underwrite issued made only by firms that they believe have high growth potentials. If any selection bias drives the behaviour of forecast errors then those errors should be higher when a larger percentage of all the forecasts available for the issuers comes from the underwriters.

Once again the evidence on the effect of analysts' affiliation on the accuracy of their forecasts is mixed. Rajan & Servaes (1997) find that there is no relation between the number of underwriters that provide forecasts and the forecast errors. Only for the three-month forecasts were the errors higher and positively related with the number of underwriters. For all other forecast horizos, errors were not affected by agency problems. So *all* financial analysts, not only those that underwrite the issues, are overoptimistic about the IPOs.

In line with the above findings, Lin & McNichols (1998) report that analysts' affiliation has no effect on analysts' overoptimism. They find no significant differences in the average forward year 1 earnings, forward year 2 earnings and long term growth forecasts for firms that make a SEO in the year prior to the issue between affiliated and unaffiliated analysts providing support to the argument that the special relation that some analysts have with the firms that make an equity issue does not affect the accuracy of their earnings forecasts.

Hansen & Sarin (1998) find that forecast made by lead analysts are not higher from forecast made from non-lead analyst providing further evidence that analysts' affiliation does not affect the accuracy of their forecasts. In fact, Hansen & Sarin (1998) find that lead analysts' errors are smaller than the non-lead error.

Dechow, Hutton & Sloan (1998) however report that the long term growth forecasts made by affiliated analysts are more overoptimistic than those made by non-affiliated analysts by as much as 4%. They argue that the higher overoptimism of affiliated firms may be driven by pressures from the analysts' employees to help to reduce the cost of the equity issue.

Overall, the issue of the accuracy of analysts' earnings forecasts around the equity issues is far from resolved. Unanswered question remain and further research is needed. An investigation into analysts' earnings forecasts overoptimism around equity issues outside the US definitely provides a challenge and will shed more light into this contentious issue.

3.3 EFFECT OF ANALYSTS' OVEROPTIMISM ON THE TIMING OF EQUITY ISSUES.

Even though there are a few studies that look at analysts' overoptimism in the period around equity issues only one study tries to link analysts' overoptimism with the time series variation in equity activity. As we saw earlier, Rajan & Servaes (1997) present evidence that analysts make overoptimistic assessments of earnings growth for IPOs. Going one step further they find that IPO activity increases when the growth potential attached to them by analysts are higher. The number of firms going public per industry per quarter increases as the average long term earnings growth forecast, for all the firms that went public in the previous 12 month period in that industry, increases. The same happens when the average long term earnings growth forecast for all IPOs in the past 12 months in the same industry increase. The coefficients on these variables remained significant even when other variables were added in the regressions such as historical and relative MB. Long term earnings growth forecasts never lose their significance.

An interpretation of the coefficients found by Rajan & Servaes (1998) suggest that a 7% increase in the long term earnings growth causes an increase in the number of IPOs per industry per quarter by 2.4. Even when the growth measure is adjusted for the growth in earnings for all seasoned firms in the same industry there is still a positive and significant relationship between growth forecasts and IPO volume..

According to Rajan & Servaes (1997) more firms decide to go public after periods when the growth potentials attached by analysts to all the recent IPOs or the recent IPOs in their industry are high. One could argue what these results show is the phenomenon that firms go public when the industries have high growth potential. To finance this growth, firms need to raise capital and an IPO is a solution to the funding problem they may experience. Since what analysts are predicting is the growth opportunities for firms what these findings may be telling us is that firm go public when growth opportunities are higher. Nevertheless, the forecast errors analysts are making are big. These forecasts do not represent an accurate prediction of the true growth potential. These predictions are upwards biased. The fact that analysts attach high growth potentials to a firm does not necessarily mean that this potential are actual or of the same magnitude. Rajan & Servaes (1998) argue that the above results are more in line with the argument that IPOs occur when analysts are overoptimistic about their earnings growth. To further support that, they find a positive and significant relation between the number of IPOs per industry per quarter and the forecast errors analysts make in forecasting the long term earnings of recent IPOs in the same industry. More negative forecast errors (adjusted for industry and size) lead to higher IPO activity. In other words, the greater the analysts overoptimism is, more firms decide to go public. The obvious benefits that could accrue to the firm that times the equity issue around periods when analysts are overoptimistic is that this overoptimism may cause an increase in the share price, therefore reducing the cost of capital. According to Rajan & Servaes (1997) IPO activity is driven by financial analysts' earnings forecasts. When analysts are more overoptimistic for the growth potentials of newly listed firms other firms seize the opportunity and go public. Any variation in that overoptimism would create a variation in IPO activity.

The significant relation between initial equity offerings and analysts' overoptimism however has not been investigated for Seasoned equity offerings and there are no international studies that support a relation between analysts' overoptimism and equity issue activity. In Chapters 8 and 9 we make our own investigation on the effect of analysts' overoptimism on the timing of equity issues in the UK. We find further evidence in favour of the sentiment timing hypothesis. IPO and SEO activity is significantly related with the analysts' overoptimism for the earnings of recent issuers.

3.4 EQUITY ISSUES AND ANALYSTS' FORECAST REVISIONS

There are studies that find evidence that firms time the equity issues around peaks of their operating performance and that an equity issue is regarded as a signal of a deterioration in the future earnings of the firm. Loughran & Ritter (1997) find that the median profit margin drops from 5.4% from the year of the offering to 2.5% at the 4th year after the offer. The mean operating income over assets and the return on assets also exhibit significant declines which are higher than non-SEO firms from similar industries, size and operating performance.

Toeh Welsh & Wong (1998) find a deterioration in the earnings of firms making a SEO in the post-issue years. According to them, that is a consequence of managers actions who are "aggressive" in their use of discretionary accruals in the pre-announcement years in order to boost share prices. The deterioration after the issue is due to the inability of managers to retain the high discretionary accruals after the issue. Healy & Palery (1990) however report that earnings do not decrease in the years after the issue. Earnings per share increase in the three years before and on the year of the issue. After the issue changes in earnings are not significantly different from zero. The industry adjusted earnings also showed no deterioration in the post-announcement years. Healy & Palery (1990) conclude that the timing of the SEO is not driven by a deterioration in future earnings.

Miller & Rock (1985) believe that actions that result in a change in the leverage signal changes of similar changes in the future earnings. An equity issue reduces the debt to equity ratio and is interpreted as a signal that the level of future earnings will deteriorate. Investors mark down the price of firms that make an equity issue to discount for that deterioration.

Financial analysts' earnings forecast can provide a useful tool to test whether managers time the SEO at the peak of their profitability. If firms time the equity issues around the peak of their operating performances and/or before a deterioration of the future earnings, then that should be "mirrored" into analysts' forecasts. Analysts' should revise downwards their earnings forecasts for the issuers after the equity issue announcement if they believe that the issuer's profitability will deteriorate after the issue. Healy & Paleru (1990) investigate analysts earnings forecasts around 93 Seasoned equity issues made from 1966 to 1981. They find that analysts' earnings forecasts in the post-announcement period are not lower than the earnings forecast made in the pre-announcement years disputing that managers time the SEO prior to a deterioration in the profitability. Brous (1992) also investigated whether a SEO sends negative signals to the market about the issuers' profitability. He uses a larger sample than Healy & Palery (1990) of earnings forecast revisions made around 431 Seasoned Equity Offers in the period 1976 to 1985 for which earnings forecasts were available. Brous (1992) finds that the average monthly forecast revisions , for the earnings of the current year in months -4 to -1 before a seasoned equity issue announcement, are positive. Average *abnormal* forecast revisions for the earnings of current year in months -6 to -1 are also positive and significant. These positive revisions mean that analysts increase their earnings forecasts before the issue announcement.

At the month of the announcement of the issue, average forecast revisions and average *abnormal* forecast revisions for the current year earnings were negative indicating that analysts revise downwards their forecasts, of current year earnings, on the announcement of a SEO. Forecasts for the current year earnings continue to be revised downwards even after the announcement month of the SEO. Average forecast revisions are negative and significant for month +1 to +5 and average *abnormal* forecast revisions are negative and significant for months +1 to +3. So, the downwards trend in forecast revisions continues even after the announcement month. Average forecast revisions and average abnormal revisions for the 5-year long term growth in earnings did not follow the same pattern. They remained unchanged in the months before or after the Seasoned equity Offer announcement. Brous' (1992) evidence suggest that firms may time their equity issues prior to a deterioration in their earnings.

No study has looked into how analysts revise their forecasts after the initial Public offering. If IPO firms time the equity issue around the peak of their profitability then analysts should revise downwards their forecasts after the firms have gone public. We intend to cover that gap by looking at financial analysts earnings forecast revisions for the UK IPOs in chapter 8. Furthermore, we look at analysts forecast revisions around UK SEOs to see whether UK firms time the SEO at the peak of their profitability.

3.5 Conclusions

Since Loughran & Ritter (1995) argued in their paper that variation in equity issuance activity is driven by variations in investors' sentiment, a growing part of the literature tried to find direct tests for the above proposition. Immediately, the focus of the attention was in financial analysts' earnings forecasts. Analysts' forecasts should be affected by the market sentiment and to some extent they may even affect it. If managers time the equity issues in periods when the market sentiment is more favourable then that should be mirrored into a relation between analysts' optimism and equity issue volume.

This chapter presented the empirical results of previous research on the issue of the effect of analysts' earnings forecast overoptimism on the timing of equity issues. That effect is severely understudied and only one study by Rajan & Servaes (1998) provides direct evidence that IPO activity in the US is higher when analysts forecast high growth in the long term earnings of recent IPOs and when analysts' overoptimism for the current year earnings of recent IPOs is high. According to them analysts are overoptimistic on average for all firms but this overoptimism is more severe for newly listed firms and has a significant impact on the IPO volume. Periods when analysts are more overoptimistic for recent IPOs are periods when IPO activity increases.

The evidence on analysts' overoptimism around Seasoned equity offerings is contradictory. Hansen & Sarin (1998) find that SEO firms are firms with high earnings growth and are not characterised by more overoptimistic forecasts relative to non SEO firms with similar growth. Ali (1995) also finds that analysts are not overoptimistic in the year prior to the issue announcement. Dechow et all (1998) however find that analysts are overoptimistic for the long-term earnings forecasts in the period around the issue. These studies however look at the state of analysts overoptimism around equity issues and not whether these overoptimism varies across time and if it affects the SEO volume. No study has been conducted into investigating what effect analysts' optimism has on the SEO volume.

In the 8^{th} and 9^{th} chapter of this thesis we look at analysts' overoptimism around equity issues in the UK. Our main purpose in these chapters is to see whether analysts' overoptimism for the earnings of equity issuers varies across time and whether it has an impact on the equity issuance volume.

Analysts' earnings forecasts have also been used in the literature to see what impact analysts believe the announcement of corporate actions such as SEOs will have on the profitability of the issuer. Studies using other accounting information find that issuers time the issue at the peak of their operating performance. The studies that used forecast revisions however provide mixed evidence. Brous (1992) shows that the announcement of a SEO induces investors to revise downwards their forecast of the current year earnings believing that the timing of SEO is driven by managers who foresee a shortcoming in the level of future earnings. Healy & Palery (1990) in contrast, find that analysts forecasts are not lower in the period after the issue relative to the forecasts made in the period prior to the issue announcement disputing the fact that the SEO signals a deterioration in the future profitability.

As with analysts overoptimism and its potential effect on issuance volume, there are no international studies that investigate analysts forecast revisions around equity issues. In chapters 8 and 9 we look at analysts forecast revisions After IPOs and around rights issues announcement to see whether these managers "time" the equity issues around the peak of their operating performance.

CHAPTER 4: DATA AND METHODOLOGY

4.1.DATA COLLECTION AND DESCRIPTION

Our data set for the Initial Public Offerings activity in the UK covers the period from January 1981 to December 1996. The sample is the sample used by Levis (1993) extended up to 1996. The name of the issuers, the listing date, the amount of proceeds, the offer price and the method of the offer were collected from KPMG New Issue Statistics. We limited our sample only to the firms that raised capital from the Issue. So, only offers for sale, offers for subscriptions and placing were used. We excluded introductions. In total 1424 firms made an IPO to the MAIN, USM and AIM markets during the period 1981 to 1996. IPO firms that subsequently went bankrupt or were taken over are also included in the sample. We also used the London Stock Exchange Fact Book and the "London Quality of markets monthly" that provide details on the new listings such as the amount of capital raised. In a few cases, details on the amount of capital raised were not available in KPMG and were found in London Quality of markets monthly.

Table 4.1 reports the annual distribution of new issues in the London Stock Exchange and the distribution of our sample. On average we have 89 new firms every year with 1994 seeing a record of 179 new firms being listed on the London Stock Exchange. Early 90's were the years with the lowest activity with only 18 firms going public in 1991. The amount of capital also varies across time. Through the 16 year period more than £ 70 billion were raised from IPOs excluding the privatisations. 1984 was a particularly active year with early 90's being the quieter period. Not for all the IPOs did we manage to find data that would enable us to calculate the first day returns. Our sample covers more than 88% of the population. In total we have first day returns for 1262 firms in the 16 year period. In columns 4 and 5 of table 4.1 we report the average and median first day return of the 1262 IPOs per year. The average first day return was 11.72% and the median 7.14%. The higher first day returns were in 1987 when the average IPO had a first day return of 25.73%. The lowest average first day returns with 4.93% was in 1981.

TABLE 4.1: ANNUAL VOLUME OF INITIAL PUBLIC OFFERINGS IN THE UK AND FIRST DAY RETURNS PER YEAR FROM 1981 TO 1996

Year	Number of IPOs per Year (source KPMG new Issue statistics)	Amount of capital raised per year[3] (prices Dec 1996) in £m	Average First Day Return	Median First Day Return	Number of IPOs for which First day returns were able to be calculated
1981	40	822	4.93%	3.48%	37
1982	48	5730	14.46%	4.67%	46
1983	76	11116	19.80%	6.86%	76
1984	96	18633	14.91%	8.93%	95
1985	122	758	8.82%	4.46%	120
1986	140	1897	8.11%	4.91%	139
1987	118	813	25.73%	22.26%	118
1988	125	1806	9.02%	6.49%	125
1989	82	526	11.02%	9.57%	82
1990	30	156	11.41%	9.77%	30
1991	18	425	10.05%	4.86%	17
1992	33	1232	6.86%	5.69%	33
1993	137	5363	11.34%	7.48%	92
1994	179	8788	5.97%	3.42%	124
1995	75	2514	8.47%	4.96%	55
1996	105	9973	10.28%	7.82%	73

Our data set for the Rights Issues covers a larger period, from 1975 to 1996. The rights issue announcement days were collected from DATASTREAM ™. In total, 2992 rights issues of common equity were announced during that period according to DATASTREAM ™ . Doing random checks to see if the day DATASTREAM ™ provides as the announcement day is correct, we found that in some cases (about 12%of 100 issues that we checked) the day given as the announcement day in DATASTREAM ™ (DAY 0) is the day the announcement appears in Financial Times. That created a problem as to what is the true date of the

[3] Excluding privatisations

announcement. If an announcement appears in Financial Times at day 0 that indicate that it could have been announced during the working hours of the previous day (-1) and so price movements should have occurred in day -1 as well. If however the announcement is made after the closure of the markets of day -1 or during the working hours of day 0, the major price movements should occur at day 0. For the rest of the issues, the announcement appears in Financial Times one day after the day reported by Datastream. In these cases if the issue is announced after the closure of markets at day 0 then the price response should occur at day +1 otherwise the price movements should occur at day 0. To cover all cases we use an event window of -1 to +1 days. Result however were similar whether periods 0 to +1 were taken. From the whole population of the rights issues in DATASTREAM, only for 1569 rights issuers did we find enough data to enable us to calculate the abnormal announcement period returns and at the same time details about the amount of capital raised were available. No DATASTREAM mnemonic and no share price at the announcement or the pre-announcement period were the reasons for the reduced sample. Dead companies that made rights issues prior to their delisting are also included in the sample. Details for the use of the proceeds from the issue are also collected from DATASTREAM ™

The following table reports the annual distribution of the DATASTREAM rights issues population and the distribution of our sample. Though the 22 year period we had 2992 announcements of rights issues. Rights issuance volume varies across time with 1987 being the busiest year with 260 issues and 1982 the quieter year with 72 issues. The amount of capital raised also varies across time with 1987 being the busiest year and 1978 the quitter one. In the last column of table 4.2 we report the average announcement period return per year. On average on the announcement of the rights issue the price of the issuer drops by 1.79%. In 1991 and 1992 however the drop was around 5% while in the late 70's the returns were almost zero.

TABLE 4.2: ANNUAL VOLUME OF RIGHTS ISSUE ACTIVITY IN THE UK AND ABNORMAL ANNOUNCEMENT PERIOD RETURNS FROM 1975 TO 1996

YEAR	NUMBER OF RIGHTS ISSUES (datastream population)	NUMBER OF RIGHTS ISSUES (Our sample [1])	AMOUNT OF PROCEEDS (datastream population) (Real terms, prices Dec 1996 in £m	AVERAGE ANNOUNCEMENT PERIOD ABNORMAL RETURNS [2] (days -1 to +1)
1975	162	72	2386	0.011***
1976	119	45	1521	-0.032***
1977	126	54	1267	0.003
1978	80	35	807	0.000
1979	95	43	3349	-0.001
1980	95	36	1281	-0.038***
1981	108	51	1995	-0.026***
1982	75	35	1021	-0.022**
1983	132	52	2093	-0.015
1984	112	53	1371	0.000
1985	135	71	3036	-0.009
1986	184	89	4678	-0.029***
1987	260	85	6325	-0.013***
1988	174	83	4612	-0.013*
1989	177	72	2974	-0.022***
1990	149	74	3108	-0.049***
1991	186	112	6655	-0.051***
1992	95	54	2228	-0.034***
1993	188	140	7809	-0.004
1994	151	126	5115	-0.030***
1995	83	82	2867	-0.013
1996	106	105	3253	0.002

*,**,** *denotes significance at 1% ,5%and 10% one tail,*

As far as the takeover bids are concerned , the method of payment and their announcement days were acquired from Dr Ayo Salami. The initial source of the sample is the journal "A*cquisitions monthly*". This journal has details about the bids made for UK public companies. Among the details it lists are the name of the bidder and the target, the announcement date of the bid and, in some cases, the bid price. It also has comments on the proposed bids that include the proposed method of payment for the bid and it also reports which issues were successful or not. The sample covers the period between 1985 to 1995. The takeover bids are bids made for UK publicly listed companies. We excluded from the sample all takeovers bid announcements that were made together with a rights issue announcement. From the whole sample we identified the bids that were financed with equity in whole or in part. In total, 482 take-over bids were financed with equity during that period. The most active years was 1986 and 1987 where 105 and 93 takeover bids financed with equity were recorded. The proportion of takeover bids over all takeover bids reached a high of 52% in 1987 while in 1990 only 16% of all bids were financed with equity.

TABLE 4.3: ANNUAL VOLUME OF TAKEOVER ACTIVITY IN THE UK FROM 1985 TO 1995

YEAR	NUMBER OF ALL TAKEOVER BIDS	NUMBER OF TAKEOVER BIDS FINANCED WITH EQUITY IN WHOLE OR IN PART	PERCENTAGE OF BIDS FINANCED WITH EQUITY OVER ALL TAKEOVER BIDS
1985	139	55	40%
1986	241	105	44%
1987	216	93	43%
1988	187	56	30%
1989	186	41	22%
1990	140	23	16%
1991	115	28	24%
1992	68	18	26%
1993	68	22	32%
1994	72	17	24%
1995	102	24	23%

All firm specific data such as market values, PE ratio, Market to book value, dividend yields, debt to equity ratios, Q ratios and Earnings per share for IPOs, Rights issuers, Takeover bidders and targets as well as macroeconomic data such as coincident economic indicators, interest rates, stock market indexes were collected from DATASTREAM ™. Share prices were all acquired from Datastream. None of the variables used in the thesis are in levels. Variables such as Market returns,

[2] the average announcement period abnormal returns are calculated according to the market model. For more details see section 4.2

interest rates, volatility, economic conditions are measured as the change from the previous month and are not in levels. All independent variables are stationary.

The choice of the econometric models used in the thesis is dictated by two things. First that the models should be similar in general when testing the influence of the same factor and second the models should be adjusted to correct for the various econometric problems that each regression exhibits. In that fashion, the regressions of the number of IPOs and SEOs per month and the amount of capital raised from IPOs and SEOs and the regressions of the percentage of equity financed takeover bids over all takeover bids is done with the COCHRANE-ORCUTT method to adjust for the problem of the serial correlation which the above regressions exhibit.

The regressions of the IPO and SEO proceeds against forecast errors is done with the Newey West method to adjust for the problem that is created with the moving average independent variables and produces an Heteroscedasticity consistent covariance.

The regressions of the announcement period returns of the rights issues and the equity financed takeover bids against firm specific variables are event studies and are done with the weighted least squares which is the established type of regression in all event studies because it gives higher weight to the cases where returns are more predictable and lower weight to the cases where returns are more unpredictable and correct for the heteroscedasticity problem.

The regressions of the first day returns against firm specific variables are with the ordinary least squares with the robust technique that the statistical package TSP offers which corrects for heteroscedasticity. The unavailability of pre-IPO prices, which makes it impossible to estimate the alpha and beta parameters which are essential for the market model, does not enable us to use the weighted least squares in the regressions of the first day returns against firm specific variables.

In all the regressions, the results that are reported are with the type of regression that corrects for the various econometric problems that the specific regression exhibits. However, alternative type of regressions were used to cross check the main points and see whether these points are sensitive to the econometric method. The main results are waterproof to the regression type and alternative types of regression such as a negative binomial regression are unlikely to qualitatively change the main points.

4.2. CALCULATION OF FIRST DAY AND ABNORMAL ANNOUNCEMENT DAY RETURNS.

First Day returns for IPOs are calculated as the difference between the price at the end of the first trading day $P_{i,1}$ and the offer price of the IPO $P_{i,0}$.

$$\textit{First day return of } IPO_i = \frac{P_{i,1} - P_{i,0}}{P_{i,0}}$$

Average Returns for day 1 are calculated as

$AR_t = \frac{1}{n}\sum_{i=1}^{n} FDR_{i,1}$ where n is the number of IPOs

Abnormal first day returns were calculated as the difference between the normal return of IPO *i* at day t and the return on the market at that day. We use the daily returns of FT ALL SHARE PRICE INDEX as a proxy for the market returns.

$ABR(_{i,t}) = R_{i,t} - R_{m,t}$

Average Abnormal Returns for day 1 are calculated as

$AAR_t = \frac{1}{n}\sum_{i=1}^{n} AR_i$ where n is the number of IPOs

The use of the market model in order to calculate the abnormal first day returns in not possible since the market model requires the use of pre-IPO prices to calculate the market model parameters (α and β) and there are no pre-IPO prices.

Abnormal announcement day returns for rights issues and takeover bids for firm i at day t were calculated as the difference between the return on asset i at day t and its expected return on that day.

$AR(_{i,t}) = R_{i,t} - E(R_{i,t})$

where the expected return is calculated according to the market model

$E(R_{i,t}) = \alpha_i + \beta_i R_{m,t} + \varepsilon_{i,t}$

The α and β are estimated from cross-sectional regression of the return on asset i against the return of the market from an estimation period of -260 to -40 trading days before the event day. As a proxy for the market returns we use the returns of the FT ALL SHARE PRICE index. Average Abnormal Returns for day -1, 0 and day +1 are calculated as $AAR_t = \frac{1}{n}\sum_{i=1}^{n} AR_t$ where n is the number of firms

The cumulative abnormal returns for the event window -1 to +1 is the sum of the average abnormal returns of days -1, 0 and +1

$$CAR_{-1,+1} = \sum_{t=-1}^{+1} AR_{i,t}$$

4.3. HOT AND COLD PERIODS.

Two ways have been used in the literature to classify periods as HOT and COLD. The first uses the economic conditions as a criterion to find which periods are HOT and COLD and the second uses the volume of equity activity. Choe, Masulis & Nanda (1993) classify HOT periods in terms of *economic conditions.* HOT periods are the upturn of the business cycle, the periods from the trough to the peak, and COLD periods are the downturn of the cycle, the periods from the peak to the trough. Bayless & Chaplinsky (1996) on the other hand define HOT periods *in terms of volume.* They rank the three month moving average of the monthly issue volume, scaled by the total month-end value of outstanding equity of NYSE, AMEX and NASDAQ. HOT periods are periods when the SEO volume is in the top quartile. COLD periods are those periods when the SEO volume is in the bottom quartile. For Bayless & Chaplinsky (1996), HOT periods are the periods when the Seasoned Equity offering activity is high and not the periods when the economic conditions are good as in Choe, Masulis & Nanda (1993).

In this thesis we use both methods. For the purpose of investigating the effect of economic conditions on the issuance volume, HOT periods are the periods between the trough of the business cycle and the peak and COLD periods are those between the peak of the cycle and the trough as in Choe et all (1993). The peak and trough is identified as the month with the highest and lowest consecutive values respectively of the Coincident indicator as supplied by Central Statistical Office.

In figure 4.1 we have plotted the coincident and short leading indicators from 1975 to 1996 and have pointed out the turning points of the coincident indicator. Throughout the 22 year period, we had four cycles in the UK economy. The first cycle started at August 1975 and lasted until February 1981. It had a duration of 67 months. The upturn was longer than the downturn with a duration of 47 months while the downturn had a duration of 20 months. The second cycle started at March 1981 and reached the peak at February 1984. The second cycle ended with the trough at December 1985 with a total duration of the cycle of 58 months. In the third cycle, the duration of the downturn was longer than the duration of the upturn. The third cycle started at January 1986 and the upturn lasted for 33 months until September 1988. After that point, the UK economy had to wait for 43 months before the end of the recession which was officially noted at April 1992. In the last cycle, the upturn lasted 30 months from May 1992 to October 1994. After that point, the UK economy entered a period of a recession and until the end of our sample in December 1996 the upturn turning point has not been recorded. Therefore the last downturn is not complete.

TABLE 4.4: BUSINESS CYCLES IN THE UK FROM 1975 TO 1996

	Upturns of the Business Cycle	Downturns of the Business Cycle
1st cycle August1975- February 1981 (67 months)	August1975- June 1979 (47 months)	July 1979- February 1981 (20 months)
2nd cycle March 1981 -December 1985 (58 Months)	March 1981- February 1984 (36 Months)	March 1984 - December 1985 (22 months)
3rd cycle January 1986 -April 1992 (76 months)	January 1986 - September 1988 (33 months)	October 1988 - April 1992 (43 months)
4th cycle May 1992 -December 1996 (56 months)	May 1992 - October 1994 (30 months)	November 1994 - December 1996 (26 months)

We have chosen to use the coincident indicator to record the turning points of the business cycle because the coincident indicator is constructed to move in line with the business cycle. The short leading indicator on the other hand is looking to the future and tries to predict where the business cycle will be in approximately one year ahead. The coincident indicator is comprised by six components: GDP at factor costs, an index of production, CBI quarterly surveys of below capacity utilisation and the change in raw materials and the monetary aggregate (M0) divided by the GDP deflator.

For the purpose of testing the overvaluation timing hypothesis we use an alternative measure of HOT and COLD periods according to the intensity of equity issuance activity. In order to classify periods as HOT or COLD for the IPO sample, we rank all months from January 1981 to December 1996 (192 months) according the 3-month moving average of the amount of capital raised from IPOs in real terms excluding privatisations. The 48 months with the highest IPO activity in terms of capital raised are classified as HOT months. The 48 months with the lowest IPO activity are classified as COLD months . The remaining 96 months are classified as OTHER.

Our rights issues sample starts earlier in time than the IPO sample, at January 1975. So, to find the HOT and COLD months in terms of seasoned Equity Issuance activity we ranked all months from January 1975 to December 1996 (264 months) according to the 3-month moving average of the amount of capital raised from rights issues in real terms. The 66 months (25% of the whole period) with the highest activity are classified as HOT and the 66 months with the lowest SEO activity being classified as COLD. The rest of the months are classified as OTHER.

The duration of the takeover sample is 11 years. In order to classify HOT and COLD periods for the equity financed takeover bids we calculated the percentage of equity financed bids over all equity bids per month from January 1985 to December 1995. Then we ranked the 132 months according to the percentage of equity financed bids over all bids. The 33 months with the higher equity financed bid activity are classified as HOT. The 33 months with the lowest equity financed bid activity are classified as COLD. The remaining 66 months are classified as OTHER.

4.4. Calculation of Long Run Performances

The issue of calculation of long run performances is a very important one in studies that draw significant conclusions from findings that rely on long run performances. In this thesis, we investigate the post-equity issue and post-bid performances and whether these performances differ according to the intensity of equity issuance and takeover activity. Therefore, we need a measure of post-issue performance that can stand against criticism. The researcher has 3 options available for the method to calculate long run returns, continuously compounded, cumulative, and buy and hold returns. In order to calculate abnormal long run returns an even larger number of options is available. The use of a market index such as the FT ALL Share price index is probably the easiest one in terms of computations. Other options include size and market to book reference portfolios or matching the sample firms by a control firm based on some firm characteristics such as size and market to book value. Finally, various models have been used such as the Fama-French three factor model and the CAPM to estimate the expected return of the sample firms. Some of these method however are fundamentally biased and the results based on them may not represent the true picture.

Barber & Lyon (1997), investigate the empirical power of several methods to calculate long run performances. They suggest that continuously compounded and cumulative returns are biased and only buy and hold returns yield unbiased results. Continuously compounded returns are negatively biased and should not be used in long run performances especially in the study of firms where significant underperformance is found such as IPOs, SEOs and bidders. The use of continuously compounded returns would result to a higher underperformance of IPOs than the one that truly exists and therefore this method should be avoided.

Cumulative returns are also biased according to Barber and Lyon (1997). They find that cumulative abnormal returns are biased predictors of long run buy and hold returns. In other words, according to Barber & Lyon (1997), on average if a firm has a 5-year buy a hold return of 0% its 5-year cumulative returns will be more than 0%. Therefore, Barber and Lyon (1997) strongly suggest the use of buy and hold returns as the best way to calculate long run performances.

The issue of choosing the best specified controlling group to calculate abnormal returns is a more difficult one. According to Barber and Lyon(1997), buy and hold abnormal returns where the controlling group is based on size or market to book deciles or equally and value weighted market indexes are negatively biased. They show that to calculate abnormal returns, the use of reference portfolios such as equally or market value weighted market indeces, or size decile portfolios is problematic. They support the use of abnormal returns that match sample firms with firms of similar size and/or market to book value ratios since that method yields well specified test statistics.

Following Barber & Lyon's (1997) recomendations we calculate the long run performances as buy and hold abnormal returns (BHAR). The buy and hold abnormal returns for firm *i* until month *t* is calculated as the difference between the buy and hold return of firm *i* until month *t* and the expected buy and hold return for firm *i* until month *t*

$$\mathrm{BHAR}_{i,t} = \prod_{t=1}^{t}[1+R_{i,t}) - \prod_{t=1}^{t}[1+E(R_{i,t})] \quad \text{where}$$

$\prod_{t=1}^{t}[1+R_{i,t})$ is the buy and hold return of the firm *i* until month *t* or its delisting and

$\prod_{t=1}^{t}[1+E(R_{i,t})]$ is the expected buy and hold return of the firm *i* until month *t* or its delisting.

The average buy and hold abnormal returns of *n* firms until month *t* is calculated as follows.

$$\mathrm{ABHARt} = \frac{1}{n}\sum_{i=1}^{n} BHARi,t$$

The buy and hold return represents the return to an investor that purchased the stock at month 0 and kept it until month t. So for example, if an IPO has an offer price of £1 and its price at the end of the first year after the IPO is £1.50 then that IPO firm has offered to the investor an annual buy and hold return of 50%. If the expected annual buy and hold return of IPO firm was 30% then the annual Abnormal Buy and Hold return of IPO firm is 20%. All returns are discrete returns and are calculated from end of month prices. First month return for the IPO firms are partial. The time interval for the IPO first month returns varies from 1 to 30 calendar days.

As proxies for the expected buy and hold returns we use three measures. First we use the buy and hold returns of the FT ALL share price index. The FTA is a market capitalisation weighted index and is comprised by approximately the largest 650 firms listed on the London stock exchange that account for almost 90% of the total market capitalisation of the London Stock Exchange. FTA may be biased for small caps but to correct for this bias we use the industry market value adjusted performance which according to Barber and Lyon (1997) is the only unbiased measure of performance

In the second method we match the sample firms with a control firm from the same industry and similar market value as the sample firm. For this purpose we rank all firms in the same industry as with the sample firm, according to their market values. The expected return for the sample firm *i* is the return of the firm in the same industry and with the immediately smaller market value. The matching is done every 12 months.

So for example, the company CPU computers went public in July 1983 and had a first month return of +14.3%. At the end of July 1983, CPU computers had a market value of £ 20.8m. We ranked all companies[4] that belonged at the same industry as with CPU computers according to their market values at the end of July 1983 and found the company with the immediately smaller market value than CPU computers. The returns of that control company from July 1983 to June 1984 were the expected return for the IPO firm CPU computers for July 1983 and the following 11 months. At the end of month 12, we match CPU computers with a new firm from the same industry according to the market value of the CPU computers at the end of June 1984.

[4] we collected share price data on more than 5000 firms from 1975 to 1998 so that we were able to compare the sample firms with a large number of firms. Both dead and live companies are included in the above sample.

For the third measure of expected returns, we match the sample firm i with a firm in the same industry and immediately smaller market to book value. So for example,as the IPO firm goes public we rank all firms in the same industry with the IPO firm i according to their market to book values. The expected return of the IPO firm i is the return on the firm in the same industry and the immediately smaller market to book value. As previously, the matching is done every 12 months.

When the sample firms are delisted, returns are truncated at the month of the delisting. In the cases where the matching firm is also delisted we removed the sample firms from the sample.

The test for the null hypothesis of zero buy and hold abnormal returns of n number of firms until month t we use the test statistic as used by Barber & Lyon (1997).

$$t_{BHAR} = \text{Average}(BHAR_{,t}) / (\sigma(BHAR_{,t}) / \sqrt{n})$$

where $\sigma(BHAR_{i,t})$ is the standard deviation of abnormal Buy and Hold returns until month t for the n number of firms.

To test the significance in the difference in the performances of two different portfolios such as the IPOs that went public in HOT and COLD volume periods, we employ the following test statistic which assumes unequal variances of the samples.

$$t = \frac{\overline{BHAR(HOT_t)} - \overline{BHAR(COLD_t)}}{\sqrt{\frac{s^2(HOT)}{n(HOT)} + \frac{s^2(COLD)}{n(COLD)}}}$$

where $\overline{BHAR(HOT_t)}$ is the average buy and hold abnormal return until month t of HOT IPOs and $s^2(_{hot})$ is the variance of Buy and Hold abnormal returns until month t of n firms that went public in HOT periods.

4.5. FINANCIAL ANALYSTS EARNINGS FORECAST ERRORS

Financial analysts earnings were obtained from Institutional Brokers Estimate System (IBES). I/B/E/S provides a global database of analysts' forecast earnings per share for a large number of publicly traded corporations world-wide. I/B/E/S covers the UK with a large number of forecasts available from 1987. I/B/E/S coverage in the UK includes forecasts for 1359 companies provided by 629 analysts.[5]

The financial analysts earnings forecast error for firm i is calculated as :

$$\frac{(ACTUAL\ EARNINGS\ PER\ SHARE)i - (FORECASTED\ EARNINGS\ PER\ SHARE)i}{SHARE\ PRICE\ OF\ FIRM\ i\ AT\ THE\ END\ OF\ THE\ MONTH\ THE\ FORECAST\ IS\ MADE}$$

We use the consensus forecasts that I/B/E/S provides. For reasons of comparability with other papers we have chosen to calculate the errors over share price and not over the actual earnings or forecasting earnings.

Analysts' accuracy improves as the announcement of the earnings approaches. We distinguish between the forecasts according to the horizon of the forecasts. The forecast horizon is measured in months from the month the forecast is made until the month the earnings are announced.

The magnitude of forecast errors is affected by many factors including the size and industry of the firm the earnings of which analyst are trying to forecast. We use in the thesis adjusted forecast errors as well which take into account the industry and size effect. The adjusted error for firm i with a forecast horizon of n months is computed as the difference between the unadjusted forecast error with a forecast horizon of n months for firm i and the expected forecast error for firm i with the same forecast horizon n. In order to compute the expected error for a particular forecast horizon of n months, first we transform the market values at the month of the fiscal year end of all the firms in the I/B/E/S sample into December 1996 prices. We identify the different industry sectors and we split each sector into 10 groups, one for each year of the sample (1987 to 1996) based on the month the forecast is made. Then we ranked all firms available in the I/B/E/S database within the same sector and the same year according to their market values at the time of the fiscal year end. We then split the number of firms into four quartiles and calculate the average error in each quartile. The expected forecast error for firm i is the average error that analysts make in the same year, as with the year the unadjusted forecast error was made, in forecasting the earnings of the firms in the same sector, in the same market size quartile with the same forecast horizon.

[5] IBES Press pack of Global Estimates as if in March 1998.

For example we take the firm JKX oil that is in the energy sector and that went public in July 1995. The first forecast that is available for that firm is made in October 1995 which is 4 months after the IPO. That forecast was forecasting the earnings of the fiscal year end of December 1995. The earnings were announced in May 1996 and so the forecast made in October 1995 had a forecast horizon of 7 months The error of that forecast is -0.0258. The company JKX oil at the time of the fiscal year end (Dec 1995) had a market value of £ 11.59m. We identified all the companies in the I/B/E/S sample that were in the same sector (Energy) and transformed their market values, at the month of all fiscal year ends for which I/B/E/S provided forecasts, in prices Dec 1996. We then "isolated" the forecasts of the energy sector that had a forecast horizon of 7 months and split the sample of the energy firms into 10, one for each of the 10 years of the sample. To allocate a particular forecast into one of the 10 years we used the month the forecasts were made. For each year we ranked the firms according to their market values at the end of the fiscal year (the end of the fiscal year may be different from the year in which the forecasts were made). Then we split the sample into four equal number quartiles and calculated the average forecast error in each size quartile. We allocated the JKX into one of the four size quartiles, which for that particular company is the SMALL. The expected forecast error for firm JKX oil was the average error of the forecasts made in 1995 with a forecast horizon of 7 months for the firms in the energy sector that belonged to the SMALL size quartile and that error turned out to be -0.0591.

4.6. FINANCIAL ANALYSTS FORECAST REVISIONS

In order to calculate financial analysts earnings forecast revisions we use analysts consensus earnings forecasts as supplied by I/B/E/S . These forecasts are on a monthly basis for individual firms. The monthly forecast revision (FRi,t) at month t for the sample firm *i* is calculated as follows:

$$FR_{i,t} = \frac{F_{i,t} - F_{i,t-1}}{P*}$$

$F_{i,t}$ is the consensus analysts earnings forecasts for the sample firm *i* at month t and $F_{i,t-1}$ is the consensus analysts earnings forecasts for the same sample firm *i* at month t-1. In the IPO sample the P* is the offer price of the IPO and is used to normalise the forecasts by the share price. We normalise the forecast revisions over the offer price and not over the price at the end of the month of the forecast because that would have produced smaller forecast revisions as the life of the IPO progresses. Suppose that the forecasted earnings per share of an IPO, with an offer price of 100p, at the end month 1 is 10 and increases to 11 at the end of month 2 and also that the forecasted earnings per share at the end of month 59 is 10 and increases to 11 at the end of month 60. The normalisation of the forecast revisions over the same share price would indicate that the forecast revisions have the same magnitude in the two months, that is 0.01 . Since the prices on average increase over time, if we have normalised the forecast revisions over the current share price, the forecast revision in month 60 will be smaller that the forecast revision in month 2 even though the actual forecast revision remains the same. (See endnote 2 for a numerical illustration of this)

The problem that could arise from the use of share prices to normalise the forecast revisions is that the average forecast revisions gives higher weight to the IPOs with small offer prices and low weight to the IPOs with high offer prices. An increase in the forecasted earnings per share from 10 to 11 for a firm with an offer price of 50p would give a forecast revision of 0.02 but a similar increase in forecasted earnings per share for a firm with an offer price of 500p would give a forecast revision of 0.002. To overcome this problem we also use price weighted forecast revisions where each firm is given a weight according to its share price. (See endnote 3 for a numerical illustration)

In the calculation of the forecast revisions for the rights issue sample the forecast revisions are normalised by the share price of the issuer at the end of month -1 relative to the announcement of the issue.

As we have shown in chapter 3, analysts' forecast accuracy increases as we approach the month of the announcement of earnings. So, expected forecast revision from one month to the following is not zero. Analysts are on average overoptimistic for the earnings of firms. As the announcement of the earnings approaches, analysts become more accurate and revise downwards their forecasts. So, the ex ante forecast revision is not zero. That is an important property that has to be taken into account in the analysis of I/B/E/S data. No safe conclusions can be made by using only normal forecast revisions. One has to control for the expected forecast revision that results from the downwards revision of analysts forecasts as time passes by. This downwards forecast revision does not result from any extraordinary piece of information but from the realisation by analysts that their forecast were too high.

Another point that has to be taken into account in the estimation of the expected forecast revision is that analysts do not revise their forecasts every month. Sudarsanam & Salami (1997), find that only 18 to 20 % of UK analysts revise their forecasts each month. Therefore, there will be a four month lag between individual analysts' updates. In other words, if an analyst provides a forecast at July, on average the next update he/she will be make will be at November. The July forecast however will affect all the forecasts from July to October. That means that the forecast revisions follow a fourth order moving average process.

In order to find the forecast revision that is caused because analysts take new information about the earnings of IPOs, or the SEOs one has to remove from the normal forecast revision the negative drift of analysts forecast revisions.

The abnormal forecast revision (AFRi,t) for firm i at month t is the difference between the normal forecast revision for firm i at month t and the expected forecast revision for that firm at month t:

$$AFR_{i,t} = FR_{i,t} - EFR_{i,t}$$

The expected forecast revision (EFRi,t) for firm i at month t is

$$EFR_{i,t} = K_i + \frac{1}{n}\sum_{s=1}^{n-1} \varepsilon_{i,t-s}$$

K_i represents the analysts overoptimism for firm i and is estimated as the average of all forecast revisions that are available for the firm i outside the period t-3 to t+3 where month t is the month of the event. K is on average negative and represents the negative drift that exists in analysts forecast revisions. The $\varepsilon_{i,t-s}$ is the unexpected component and is measured as the difference between K_i and actual forecast revision at month t. This unexpected component is summed over a period of a minimum of one month (s) and a maximum of four month .

We also calculated price weighted abnormal forecast revisions (PWAFR).

$$PWAFR_{i,t} = \sum_{i=1}^{n} W_i \, AFR_{i,t}$$

where W_i is the weight for firm i and is equal to the offer price P^*_i of IPO firm i over the sum of all offer prices P^*_i $W_i = \frac{P^*_i}{\sum_{i=1}^{n} P^*_i}$

and n is the total number of firms

Inclusion in the sample required that earnings forecasts for the firms were available for at least 5 months prior to the announcement month of the rights issue. No such requirements were imposed in the IPO sample.

CHAPTER 5: THE TIMING OF UK INITIAL PUBLIC OFFERINGS

5.1. INTRODUCTION

Previous research has pointed out the significant variations in the Initial Public Offerings activity across time. Ritter (1991), Loughran and Ritter (1995) for US stocks and Levis (1993), Gerbich (1996) and Rees (1997) for UK among others, document that there are some periods when IPO activity is high and other periods when the activity subsides.

A lot of effort has been put into trying to explain this variability without crystal clear results. According to Loughran and Ritter (1995) and Ritter (1991) variation in IPO activity arises from changes in investors' sentiment. They believe that issuers take advantage of transitory "windows of opportunity" during which issuers can achieve higher valuations and issue equity when their stock is valued above its' fundamental value. Managers want to minimise the cost of capital and in doing so they want to set the offering price of the IPO at the higher price possible. When they identify a "window of opportunity" during which investors are willing to pay prices for new issues higher than the fundamentals, firms grab the opportunity and go public.

If the offer price of the IPO is set at a level which is above the intrinsic value of the firm then, as time progresses, and investors gradually realise that the true value of the IPO is lower, a mark down of IPO shares should occur. According to the "window of opportunity" theory, IPO firms should perform badly after the issue. The literature is full of studies that document that IPOs underperform after the listing. According to the sentiment timing theory, variations in the IPO volume are driven by variations in investors sentiment. More firms go public during periods when the magnitude of overvaluation is higher. If that is the case, the post-issue underperformance should be higher for those IPOs that have the most overvalued issues. If there are periods when issuers can achieve higher levels of overvaluation in their issues then the IPOs that go public in those periods must have worst post-IPO performances. The evidence on the relation between IPO activity and post-issue underperformance is mixed. Aggarwal & Rivoli (1990), Ritter (1991), Loughran &

Ritter (1995) and Helwege & Liang (1997) find that US IPOs that come into the market in periods of heavy IPO volume have worst post-issue performances than IPOs that go public in light IPO volume periods. The international evidence however do not suggest that IPO volume is related with the post-issue performance. Ljungqvist (1997) finds that German IPOs that go public in heavy IPO volume periods have similar post-IPO performances than IPOs that go public in light IPO volume periods. Levis (1993) also does not find a negative relation between the intensity of UK IPO volume and their post-IPO performance.

The issue of overvaluation exploitation and the relation between IPO volume and post-issue performance has not been adequately tested for the UK IPOs. Levis (1993) finds no relation between annual volume of IPOs and post-IPO performance. He relies however on the visual examination of the 3 year wealth relatives of IPOs that went public in different years and the choice of HOT and COLD years is rather subjective. We use a more stylised approach to classify periods as HOT and COLD based on the 3 month moving average of the amount of capital raised from IPOs in real terms. That, together with a larger sample with a time span of 16 years relative to the 9 years in Levis (1993) enables us to test the sentiment timing theory with greater confidence.

Several studies have found that equity issuance activity increases as economic conditions improve, Choe Masulis & Nanda (1993), Rees (1997), Gerbich (1996). The most obvious explanation for an increase in equity financing in periods of favourable economic conditions is that during these periods companies are expected to grow faster and firms need to fund the high growth. Other studies however emphasise the importance of information asymmetries and link the higher equity financing during the upturn of the business cycle with a reduction in the adverse selection costs associated with equity issues during periods of improving economic conditions.

According to information asymmetry models, during periods of high uncertainty, investors are less able to determine with accuracy the true value of the IPO and therefore managers have to "leave more money at the table", that is, to offer higher underpricing in the IPO to persuade uninformed investors to participate in the issue. Periods of high uncertainty about the true value of firms that go public are periods when the average underpricing is higher. High underpricing increases the cost of the IPO. If managers want to see the smallest possible first day returns, then more firms may seek to go public at periods with low uncertainty and lower underpricing.

Jegadeesh, Weinstein and Welsh (1993), Michaely & Shaw (1994) do not support the story that IPO volume in the US is driven by lower underpricing. Gerbich (1996) however, finds that the amount of capital raised from UK IPOs increases as the average first day return of the IPOs that went public during the previous quarter decrease.

Even though the evidence on the relation between IPO activity and average first day returns is mixed, there is quite a lot of research going on in order to identify which periods are characterised by lower uncertainty and lower first day returns and therefore represent a window of opportunity to go public. According to Choe Masulis and Nanda (1993), a factor that has an effect on the level of information asymmetry and on adverse selection costs associated with the announcements of SEOs, is the business conditions. According to them, the negative price reaction observed on the announcement of a SEO is caused by investors who regard an issue as an attempt to exploit overvaluation. When the economy is during the phase of an expansion, the adverse selection costs associated with the announcement of a Seasoned equity Offer are lower. During periods of good economic conditions firms face better investment opportunities and ceteris paribus, the announcement of an equity issue creates less concerns for investors that managers seek to exploit overvaluation. The seasoned equity issue announcement is accompanied by a smaller price drop when it is made during the upturn of the business cycle. Gerbich (1996) applies that model to the UK IPO activity and finds that the degree of underpricing is related to economic conditions. He shows that when the business cycle is near the peak, the average number of trading days (duration) between two consecutive IPOs is smaller than the average number of trading days between two consecutive IPOs that go public during a recession. Following that, he finds that during periods when IPOs come into shorter intervals, the average first day returns are low therefore establishing an indirect negative relation between economic conditions and first day returns. When the economy is in the last phase of the expansion, IPOs come in shorter intervals and when IPOs come into shorter intervals the average first day returns are lower. During the downturn of the cycle, the average number of trading days between two consecutive IPOs increases and as the number of trading days between two consecutive IPOs increases, the first day returns also increase.

This indirect relation between the state of the economy and the average underpricing, together with the larger number of IPOs found during the upturn of the cycle lead Gerbich (1996) to conclude that the reason behind the high IPO activity in the upturn of the cycle is partly the reduction of average first day returns observed during the upturn. To further strengthen his conclusions he finds a negative relation between the magnitude of the average first day returns of the IPOs that went public in the previous quarter and the amount of capital raised form IPOs in the current month. According to Gerbich (1996), the improvement in economic conditions decrease the uncertainty for the IPOs intrinsic value and therefore managers can raise their offer prices at higher level resulting to lower first day returns.

We believe however that there is a more direct way to test if first day returns and therefore adverse selection costs, are lower during periods of good economic conditions by looking at the first day returns across upturns and downturns of the business cycle. We do not use the duration measure in this chapter because we think that it puts an unnecessary "intermediary" which distorts the results. We directly test whether average or median first day returns are lower during the upturn of the business cycle to see if the improvement in economic conditions has a negative impact on the average first day returns. Furthermore, we investigate whether the magnitude of the first day returns for the recent IPOs has a significant impact on the IPO volume. A negative and significant relation between underpricing and IPO volume would suggest that managers do care about the magnitude of the first day return and that more capital is raised or more firms go public when the indirect costs of going public are lower.

This chapter extends the IPO literature by testing the effect of the state of the business cycle both on IPO activity and first day returns. It also provides evidence on the post-IPO performance of UK IPOs that made the issues in Heavy and Light volume periods. The use of industry/market to book value and industry/market value adjusted post-IPO performances adds to the validity of our findings.

Summarising our main results we find that:

1. More firms make an IPO and more capital is raised from IPOs during the upturn of the cycle relative to the downturn of the cycle.

2.The level of underpricing is not lower during the upturn of the business cycle and it has no effect on the volume of IPOs. The magnitude of the first day returns during the previous quarter has no impact on the number of IPOs on the current month or the amount of capital raised from IPOs.

3. Periods of heavy IPO volume are periods when firms can achieve higher prices for their issues. IPO firms in the UK underperform in the post-Issue period. Firms that go public during heavy IPO volume periods however, have significantly worst post-IPO performances relative to the IPOs that go public in light IPO volume periods indicating that overvaluation exploitation and sentiment timing is a major driving force of IPO activity.

The rest of the chapter paper follows like that. In the next section we present our evidence on the UK IPO activity and the effect of economic conditions on the IPO volume and on the first day returns followed by an investigation of the relation between IPO volume and underpricing. After that, we test whether IPOs exploit overvaluation and whether heavy IPO volume periods are periods when managers can achieve higher valuations for their offers .

5.2. UK IPO ACTIVITY ACROSS TIME

The number of firms making an IPO in the UK is not constant across time. In figure 5.1 we present the number of IPOs per month from January 1981 to December 1996 and can see that the number of IPOs per month varies across time. The source of the IPO sample is the KPMG New Issue statistics. (For more details on the data collection see section 4.1). Through the 16 year period, 1424 firms went public with the method of offer for sale , offer for subscription or placing. There is a difference in the intensity of activity across time. In the 4 years from 1985 to 1988, 505 firms went public while in the 4 years that followed, only 163 firms floated into the stockmarket. Table 5.1 reports the annual distribution of the number of IPOs, the amount of capital raised and the average first day returns. The same annual numbers can be found at figure 5.2. The busiest year was 1994 with 179 firms going public while in 1991 only 18 firms made an IPO. The amount of capital raised also varies across time with 1984 being the busiest and 1990 the quieter year. The average first day returns also exhibit significant time series variation. Due to lack of share prices in DATASTREAM, we were unable to calculate the first day return for 162 issues. 1987 was the year with the highest average first day return which is 25.73% and 1981 has the lowest average first day return with 4.93%. Median first day returns exhibit similar fluctuations with the averages. 1987 was the year with the highest medians return of 22.26% while 1981 had a median first day return of only 3.48%.

TABLE 5.1: ANNUAL VOLUME OF INITIAL PUBLIC OFFERINGS IN THE UK AND FIRST DAY RETURNS FROM 1981 TO 1996

Year	Number of IPOs per Year (source KPMG new Issue statistics)	Amount of capital raised per year (prices Dec 1996) in £m excluding privatisations	Average First Day Return	Median First Day Return	Number of IPOs for which First day returns were ale to be calculated
1981	40	822	4.93%	3.48%	37
1982	48	5730	14.46%	4.67%	46
1983	76	11116	19.80%	6.86%	76
1984	96	18633	14.91%	8.93%	95
1985	122	758	8.82%	4.46%	120
1986	140	1897	8.11%	4.91%	139
1987	118	813	25.73%	22.26%	118
1988	125	1806	9.02%	6.49%	125
1989	82	526	11.02%	9.57%	82
1990	30	156	11.41%	9.77%	30
1991	18	425	10.05%	4.86%	17
1992	33	1232	6.86%	5.69%	33
1993	137	5363	11.34%	7.48%	92
1994	179	8788	5.97%	3.42%	124
1995	75	2514	8.47%	4.96%	55
1996	105	9973	10.28%	7.82%	73

The first day return is calculated as the percentage change between the closing price of day +1 and the offer price

Table 5.2, presents the number of IPOs and the average first day returns per industry. We present only the industries that had than 14 IPOs or more in the 1981 to

1996 period (Other industries also available but not reported). We can see in the first column that the number of IPOs varies across industries. We can not say however that IPO activity in concentrated in certain industries. Electronic equipment and Information technology firms have the higher numbers of IPOs with 79 and 46 IPOs respectively but there are other industries with a large number of IPOs.

In table 5.2 we also report the average first day returns in each industry. There is a variation in the average first day returns across industries. The broadcasting has the higher first day returns with an average of 21.3% and the Road transport has the lower average first day returns with 2.6%.

TABLE 5.2: NUMBER OF INITIAL PUBLIC OFFERINGS AND AVERAGE FIRST DAY RETURNS PER INDUSTRY

INDUSTRY CLASSIFICATION	IPOs IN THE INDUSTRY	AVERAGE FIRST DAY RETURNS OF THE INDUSTRY
ELECTRONIC EQUIPMENT	79	15.1 %
INFORMATION TECHNOLOGY	46	18.3 %
BUSINESS SUPPORT	44	11.4 %
RETAIL, CHAIN STORE	41	10.8 %
PROPERTY DEVELOPERS	40	15.5 %
OTHER BUSINESSES	34	11.6 %
FOOD PRODUCERS	32	14.4 %
LEISURE FACILITIES	29	15.7 %
HOUSE BUILDING	27	5.4 %
OTHER BUILDING MATERIALS	24	13.2 %
MEDIA AGENCIES	23	13.8 %
PUBLISHING	22	12.3 %
DISTRIBUTORS IND. COMPANIES	22	18.6 %
PAPER AND PACKAGING	21	11.5 %
ROAD TRANSPORT	20	2.6 %
ENGINEERING, GENERAL	20	9.1 %
PHARMACEUTICALS	19	13.1 %
BROADCASTING	19	21.3 %
VEHICLE DISTRIBUTION	19	10.3 %
OTHER CONSTRUCTION	19	8.4 %
ELECTRICITY	18	18.4 %
MEDICAL PRODUCTS	18	11.5 %
MISCELANEOUS. FINANCIAL	14	12.7%

The purpose of this chapter is to find what drives the IPO variation in the UK by testing the alternative theories that have been proposed. Choe, Masulis and Nanda

(1993) and Gerbich (1996) talk about the effect of economic conditions on the volume of equity issuance. Indeed, we find that we have more Initial Public Offers per month during the upturn of the business cycle relative to the downturn of the business cycle . The upturn and the downturn of the business cycle is determined according to the coincident indicator. The upturn is defined as the period between the trough and the peak and the downturn is defined as the period between the peak and the trough. We have 8.78 IPOs on average per month during the upturn of the cycle (KPMG population) and 6.67 IPOs per month in the downturn of the cycle, a difference which was significant with a test statistic of 2.39. The median numbers were 8 IPOs per month during the upturn and 6 IPOs per month during the downturn of the business cycle (difference in the medians is also significant with a test statistic of 2.26)

In the sample that includes only the IPOs for which first day returns were found, the number of IPOs per month in the upturn of the cycle is 7.65 and 5.69 IPOs per month during the recessions, a difference which was significant at 1% level two-tails tests with a test statistic of 2.69. (The median numbers were 6 and 4 IPOs per month respectively, a difference which was also significant at 1% two tail tests.

We also split each upturn and downturn into three equal length sub-periods to create 6 sections of the cycle to see how the IPO activity varies across the whole duration of the cycle. So, if an upturn has a duration of 30 months we create three sub-periods (upturn 1, upturn 2, upturn 3) of 10 month duration each.

IPO activity at the beginning of the expansion is 6.64 IPOs per month (KPMG population) and increases to 9.09 and 10.64 IPOs per month in the middle and last phase of the expansion respectively (Figure 5.3). As the economy enters the recession, IPO activity drops to 7.73 and 5.67 IPOs per month in the first and second parts of the recession respectively. Just before the economy reaches the trough, IPO activity picks up slightly but still remains low with 6.41 IPOs per month.

Median number of IPOs per month across the business cycle also exhibit a similar pattern with the averages. The period before the peak has the higher activity with 9 IPOs per month. In the first part of the upturn 5 IPOs go public and in the middle part of the expansion we have 7 IPOs per month. After the economy has gone into a recession the median IPO firms per month is 7 and drops further to 4 in the middle part of the recession only to pick up slightly to 5 IPOs in the last period of the recession.

Even in the reduced sample that includes only the firms for which first day returns were available, the same pattern of higher IPO activity during the last part of the upturn of the business cycle is observed (Blue bars in figure 5.3). During the last phase of the upturn of the business cycle we have the largest number of IPOs per month (9.00) and in the middle of the recession we have the smaller number of IPOs per month (4.63) .

IPO ACTIVITY ACROSS THE BUSINESS CYCLE

Phase of the Business Cycle	Upturn 1	Upturn 2	Upturn 3	Downturn 1	Downturn 2	Downturn 3
Average number of IPOs per month (KPMG population)	6.64	9.09	10.64	7.73	5.67	6.41
Average number of IPOs per month (sample with first day returns)	6.23	7.73	9.00	6.97	4.63	5.45
Median number of IPOs per month (KPMG population)	4.33	6.00	7.50	6.50	3.00	3.67
Average amount of capital raised from IPOs per month (NO PRIVATISATIONS IN £M)	142	334	859	467	105	447
Average amount of capital raised from IPOs per month (WITH PRIVATISATIONS IN £M)	238	681	894	848	421	633

The same pattern across the business cycle is observed when we look at the amount of capital raised from the IPOs per month in real terms (prices Dec 1996 excluding privatisations). On average, firms raise 451 £ million every month during the upturn of the cycle and £ 366 million during the downturn of the cycle (Difference was significant at 10% two tails). Median values were £ 106 m and £ 54m per month in upturns and downturns respectively. (significant at 10% also). The most intense part of the business cycle in terms of amount of capital raised is the period before the peak of the cycle (figure 5.3a) when £ 860m is raised every month from IPOs. Activity remains high during the first part of the recession with

£467 million raised on average per month but during the middle part of the downturn IPO activity is very low with only £ 105m raised on average per month. Just before the end of the recession, volume picks up again to £447m per month.

If we include the privatisations in the sample then we find no difference in the amount of capital raised from IPOs across upturns and downturns. During the upturns the capital raised is £ 616m per month on average, while during the downturn the amount raised is £665m. In figure 5.3a we have also plotted the amount of capital raised from IPOs across the business cycle including the privatisations. We see that when privatisations are included in the sample there is no difference between the upturns and the downturns. The least active period is the first part of the upturn with £238m raised while in the middle and the last phase of the expansion £681m and £894m were raised. Activity remains high even when the economy enters the recession with £848 m raised in the first part of the downturn (Jaguar and the water companies made the IPO during that part of the business cycle) and £421m in the middle of it (BT, British Steel, Abbey National). In the last phase of the recession £633m are raised on average per month including the privatisations (Powergen, National Power, Scottish Power).

From the above descriptive statistics we can safely argue that IPO activity is higher during the expansion phase of the business cycle. We have more firms conducting an IPO when economic conditions are improving and more capital is raised during the upturn of the business cycle when we exclude the privatisations. The results above provide evidence that there is a positive relation between economic conditions and the intensity of Initial Public Offering activity. Of course this is not something extraordinary. During the expansion phase of the business cycle firms face increased demand for their products. More investment opportunities appear and the Net Present Value of the projects is likely to be higher during that time when demand is high relative to the downturn when the demand is low, therefore inducing firms to invest more heavily. A source of finance is to issue additional capital. Therefore we may have more IPOs in the expansion because firms want to finance the increased demand for growth. The fact that firms face better investment opportunities during the upturn of the cycle however also means that these firms should also find it easier to acquire credit to fund such projects. Interest rates start declining during the middle and last stages of an expansion making credit cheaper. Therefore, an improvement in economic conditions should not automatically lead firms to make an IPO just because demand for investments increases. Other factors may well affect the timing of equity issues.

Choe, Masulis and Nanda (1993) find that the monthly ratio of common shares issued over all securities issued in the US increases during the upturn of the business cycle. They argue that the cause of the increase in equity financing during the upturn of the business cycle is that issuers of common stock face lower adverse selection costs when they announce the equity issue offer during an expansion. Gerbich (1996) also finds that IPO activity in the UK is higher during the upturn of the cycle and argue that the increased IPO activity during periods of improving economic conditions results from lower underpricing. According to Gerbich (1996), during the middle and last part of the expansion, an IPO comes into the market every 2.4 and 2.85 days respectively. During the downturn of the cycle IPOs come onto the market in 2.71, 3.81 and 5.64 day intervals in the three sub-periods of the recession respectively. During periods when the intervals between two consecutive IPOs is low, Gerbich (1996) finds that first day returns are lower than during periods when the time interval between IPOs is longer, establishing an indirect link between economic conditions and underpricing. He does not however report the degree of underpricing during upturns and downturns which would have been a more appropriate test and would have established a direct and coherent relation between underpricing and economic conditions.

The first hypothesis we are testing is whether the average Initial Public Offering has lower first day returns during the upturn of the business cycle relative to the downturn of the cycle.

The Null and alternative hypothesis are:

H_0: The first day returns of IPOs that go public during the Upturn of the business cycle are the same with the first day returns of IPOs that go public during the downturn of the cycle.

$H\varepsilon$: The first day returns of IPOs that go public during the Upturn of the business cycle are significantly lower than the first day returns of IPOs that go public during the downturn of the cycle.

To provide support that the average underpricing is significantly lower during the upturn of the business cycle we have to reject the null hypothesis in favour of the alternative hypothesis.

To do so, we compare the average and median first day returns across the upturn and downturn of the business cycle. If the average first day returns are significantly lower during the upturn of the business cycle we will reject the null hypothesis in favour of the alternative and would be able to support the theory that adverse selection costs for IPOs as expressed by the average first day returns are lower when economic conditions are good.

5.3. FIRST DAY RETURNS ACROSS THE BUSINESS CYCLE.

We find that the average first day return for Initial Public Offers that came to the market during the upturn of the business cycle is 12.72% and it is 10.07% for the firms that went public during the downturn of the cycle. The difference was statistically significant with a t-statistic of 2.36 (significant at 5% two tails).The medians are 7.04% and 7.14% respectively and not significantly different from each other.

TABLE 5.3 FIRST DAY RETURNS ACROSS UPTURNS AND DOWNTURNS OF THE BUSINESS CYCLE

	UPTURN OF THE BUSINESS CYCLE	**DOWNTURN** OF THE BUSINESS CYCLE	T STATISTIC OF DIFFERENCE BETWEEN UPTURNS AND DOWNTURNS
AVERAGE First day Returns, (number of observations)	12.72% (769)	10.07% (490) [1]	*2.36*
Test statistic of difference of averages from zero	*16.1*	*14.02*	
MEDIAN First day Returns	7.04%	7.14%	*-0.0972*
Test statistic of difference of medians from zero	*8.98*	*9.92*	
Percentage of IPOs with positive returns	79.9%	79.6%	
Percentage of IPOs with negative returns	20.1%	20.4%	

1. *the number of observations in upturns and downturns is smaller than the total number of issues in our sample of 1262 because the first cycle starts at march 1981 while the whole sample starts from January 1981*

If we look at table 5.4 or figure 5.3 we can see that the average first day returns (solid green line) per month are low at the first part of the expansion with the average IPO firm having a first day return of 7.86% but increase in the middle of the expansion to 19.65%. Before the peak of the cycle the average first day return is 10.14% per month and drops further after the economy enters a recession to 9.74%. In the middle part of the recession, average first day return is 13.88% and drops in the last phase of the recession just before the trough to 7.98%.

Median first day returns exhibit a similar pattern to the average first day returns with the early part of the expansion having a median first day return of 4.89%. In the middle part of the recession, median first day returns reach the higher level with 12.17% and the period before the peak has median first day returns of 5.98%. After the economy has started the downturn, median first day returns are 7.54% and remain at the same level in the middle of the recession with 8.81%. Just before the end of the recession median first day returns dip to a low of 4.65%.

TABLE 5.4: FIRST DAY RETURNS ACROSS DIFFERENT PHASES OF THE BUSINESS CYCLE

PHASE OF THE BUSINESS CYCLE	UPTURN 1	UPTURN 2	UPTURN 3	DOWNTURN 1	DOWNTURN 2	DOWNTURN 3
AVERAGE First day Returns, (number of observations)	7.86% (207)	19.65% (259)	10.14% (303)	9.74% (196)	13.88% (123)	7.98% (161)
Test statistic of difference of average from zero	*7.09*	*11.8*	*9.1*	*7.4*	*10.4*	*8.2*
Percentage of positive returns	***75%***	***81%***	***82%***	***79%***	***85%***	***76%***
Percentage of negative returns	***25%***	***19%***	***18%***	***21%***	***15%***	***24%***
Median First day Returns	4.89%	12.17%	5.98%	7.54%	8.81%	4.65%
Test statistic of difference of medians from zero	*4.42*	*7.36*	*5.36*	*5.78*	*6.63*	*4.83*

The period of the business cycle with the higher first day returns, both in terms of averages and medians, is the middle of the expansion and the period with the lower first day returns is the start of the upturn for the averages and the end of the recession for the medians.

We also investigate whether the higher first day returns we find during the upturn of the business cycle is caused by a specific expansion period. In table 5.5 we present the average and median first day returns across the individual business cycles from March 1981 to Dec 1996. In two out of the three expansion phases, average first day returns are significantly higher than the average first day returns during the subsequent downturn phases of the cycle.

In the first upturn, from February 1981 to February 1984, the average first day returns of the 170 IPOs that went public in that period was 15.5% (median is 4.9%). In the recession that followed, the average first day returns were 10.7%, the difference was significant with a test statistic of 1.91 (median was 6.01% and the difference was not significant). In the second cycle, that started at December 1985, the average first day returns were 14.2% during the upturn and 10.2% during the downturn a difference which was significant with a test statistic of 2.77 (medians were 9.2% and 8.4% respectively but the difference in the medians was not significant). Only in the last cycle are the average first day returns lower during the upturn (average 8.1%) relative to the downturn that followed (average 9.1%) but not statistically significantly (test statistic was -0.59).

TABLE 5.5: FIRST DAY RETURNS ACROSS BUSINESS CYCLES IN THE UK

Period of the **Upturn** of the Business Cycle	Average First Day returns	Median First Day returns	Period of the **Downturn** of the Business Cycle	Average First Day returns	Median First Day returns
March/1981 to Feb/1984	15.5% (170 IPOs)	4.9%	March 1984 to December 1985	10.7 % (177 IPOs)	6.01%
January 1985 to September 1988	14.2 % (378 IPOs)	9.2%	October 1988 to April 1992	10.2 % (156 IPOs)	8.4 %
May 1992 to October 1994	8.1 % (221 IPOs)	4.6 %	November 1994 to December 1996	9.1% (149 IPOs)	5.6 %

Overall, average first day returns are **not** significantly lower during any expansion phase of the business cycle in the years from 1981 to 1996.

Ritter (1984) reports that there are periods when average first day returns are higher. He argues however that this phenomenon is caused largely by the natural resources industry. It may be the case that our results are sensitive to the inclusion of IPOs from a particular industry that may experience extremely large first day returns in the upturn of the cycle and extremely low returns in the downturn of the cycle.

What we can observe from table 5.6 is that there are 4 industries where the first day returns are statistically significantly[6] higher during the upturn of the cycle and no industry where the first day returns are statistically significantly lower during the upturn of the business cycle. The rest of the industries did not have significant differences in the average first day returns across the business cycle. From that table, we can say that the higher first day returns found during the upturn of the business cycle are not caused by a particular industry. No industry has significantly lower first day returns during the upturn of the business cycle. To the contrary, 4 industries have significantly higher first day returns during the upturn of the business cycle.

Overall, it seems that first day returns are not lower during the expansion phase of the business cycle. Even when we used the abnormal first day returns (adjusted for movements in the FT ALL share) the findings remain the same (not reported). Underpricing is not lower during expansions. To the contrary, there are evidence that average first day returns are significantly higher during the upturn of the business cycle.

To further clarify whether economic conditions affect the degree of underpricing in the next section we run regressions where the dependent variable is the first day return against measures of business cycle and other variables that have been found to have an effect on the magnitude of underpricing. It could be the case however that the higher first day returns during the upturn of the business cycle may be just a coincidence that arises from a stronger and more fundamental relation between first day returns and other variables. First day returns have been found to be related with a lot of variables such as the market returns, market volatility, and issuers characteristics such as market value and the method of issue.

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[6] Statistically significant at least at 10% level one tail tests

TABLE 5.6: NUMBER OF IPOs AND AVERAGE FIRST DAY RETURNS PER INDUSTRY ACROSS UPTURNS AND DOWNTURNS OF THE BUSINESS CYCLE

INDUSTRY CLASSIFICATION	FIRST DAY RETURNS DURING THE **UPTURN** OF THE CYCLE	FIRST DAY RETURNS DURING THE **DOWNTURN** OF THE CYCLE	NUMBER OF IPOs DURING **UPTURN** OF THE CYCLE	NUMBER OF IPOs DURING **DOWNTURN** OF THE CYCLE
ELECTRONIC EQUIPMENT	14.1 %	17.1 %	52	29
INFORMATION TECHNOLOGY	22.0 %	13.5 %	26	21
BUSINESS SUPPORT	12.6 %	10.1 %	22	22
RETAIL, CHAIN STORE	10.9 %	10.6 %	24	17
PROPERTY DEVELOPERS	18.5 %	17.0 %**	36	7
OTHER BUSINESSES	12.3 %	10.4 %	21	13
FOOD PRODUCERS	14.7 %	14.1 %	18	14
LEISURE FACILITIES	17.7 %	13.3 %	16	13
HOUSE BUILDING	5.6 %	4.9 %	19	8
OTHER BUILDING MATERIALS	13.4 %	12.7 %	16	8
MEDIA AGENCIES	15.5 %	12.5 %	10	13
PUBLISHING	12.5 %	.11.5 %	18	4
DISTRIBUTORS IND. COMPANIES	22.1 %	13.7%	13	9
PAPER AND PACKAGING	13.0 %	5.4%**	17	4
ROAD TRANSPORT	2.3 %	3.6%	16	4
ENGINEERING, GENERAL	11.8 %	5.0 %*	12	8
PHARMACEUTICALS	15.7 %	9.5 %	11	8
BROADCASTING	31.3 %	10.2 %**	10	9
VEHICLE DISTRIBUTION	12.2 %	3.5 %	15	4
OTHER CONSTRUCTION	10.7 %	5.1 %	11	8
ELECTRICITY	11.4 %	18.8 %	1	17
MEDICAL PRODUCTS	13.3 %	7.5 %	12	6
MISCELANEOUS. FINANCIAL	12.8%	12.4%	12	2

In table 5.7 we present the results of the ordinary lest squares regression analysis where the dependent variable is the first day return of every IPO and as independent variables we use market wide and firm specific characteristics. All the firm specific variables are measured prior to the opening of the first trading day. The purpose of these regressions is not to find what factors affect the first day returns but to see if first day return are lower during the upturn of the business cycle after allowing for as many firm specific characteristics. To see the effect of business conditions on underpricing we use two dummy variables. The first dummy takes the value of 1 if the issue takes place during the upturn of the cycle and zero otherwise. The second dummy takes the value of 1 if the issue takes place during the second half of the upturn and zero otherwise. If these dummies have negative and significant coefficients that we can argue that the IPOs that go public in the upturn have lower underpricing.

We find that the market return positively affects the first day returns. The higher the 60 day market run up prior to the beginning of the flotation month , the higher the first day returns. The test statistics ranged from 2.52 to 3.32. A potential explanation for that could be the time lag between the day the price of the IPO is decided and the day the firm is going listed. The price is decided a few weeks before the first trading day. If the market has risen in the period in-between then we could see higher first day returns for the IPO in order to "catch up" with the market. That result is similar with the result of Byrne & Rees (1996) who regress the initial return of individual IPOs against the log of the 4 week return of the market.

TABLE 5.7: ORDINARY LEAST SQUARES REGRESSION ANALYSIS OF THE FIRST DAY RETURNS 1981 -1996

The regression we run had the following format:

(First Day return) = Constant + (Market to book value) + (P/E) + (Market value of issuer) + (Market run up) + (market Volatility) + (Growth in coincident indicator) + (Dummy1) + (Dummy2) + (method of payment)

	Constant	market run up 60 trading days	Market value of issuer (real terms)	Market to Book Value	P/E	Volatility of 60 trading days	Growth in coincident indicator	Dummy 1 (1 if upturn of the cycle 0 otherwise)	Dummy 2 (1 if second half of expansion, 0 otherwise	Method of Issue (1 if placing, 0 otherwise	N	R^2
1	0.0682 (3.16)	0.191 (2.52)	0.0015 (0.90)		0.0027 (1.86)	0.085 (1.82)	1.58 (2.01)				833	1.4%
2	0.1020 (10.03)	0.2342 (3.10)	0.0050 (0.20)	0.0019 (1.24)		0.0416 (0.66)	1.2492 (1.50)				841	0.76%
3	0.061 (3.06)	0.1977 (2.55)	0.00014 (0.82)		0.0028 (1.84)	0.0879 (1.79)		0.0135 (1.05)			833	1.29%
4	0.0964 (8.49)	0.2368 (3.07)	0.0062 (0.25)	0.0019 (1.29)		0.0431 (0.66)		0.0111 (0.85)			841	0.66%
5	0.063 (2.97)	0.222 (2.87)	0.000151 (0.86)		0.0025 (1.67)	0.0788 (1.65)			0.02958 (1.91)		833	1.7%
6	0.0965 (9.00)	0.2541 (3.32)	0.0072 (0.29)	0.0018 (1.21)		0.0383 (0.59)			0.0204 (1.34)		841	0.83%
7	0.0445 (1.82)	0.2 19 (2.84)	0.00027 (1.33)		0.0025 (1.65)	0.078 (1.62)			0.2601 (1.67)	0.0252 (1.73)	833	1.87%

Market to book value, PE ratio and the market value of issuer are measured prior to the opening of the first trading day. MARKET RUN UP is the 60 day cumulative returns of the FT All Share measured prior to the beginning of the month of the offer, VOLATILITY is the 60 day volatility of the daily returns of the FT ALL SHARE PRICE INDEX measured prior to the beginning of the month of the offer. The growth in the coincident indicator is the monthly change in the Coincident indicator supplied by Central Statistical Office. DUMMY 1 takes the value of 1 if the month is classified as Upturn of the business cycle and 0 if the month is classified as downturn of the business cycle. DUMMY2 takes the value of 1 if the month is during the second half of the expansion and zero otherwise. Dummy METHOD takes the value of 1 if the IPO is made through placing and 0 if it is made with other methods The results are corrected for Heteroscedasticity with the Robust method offered by the statistical package TSP. T-statistics are given in parentheses below the coefficients

We find that the size of the firm does not have an impact on the first day returns. A positive relation between the PE ratio and the first day returns is found as in Byrne and Rees (1996). We use however the firm specific PE ratio and not the PE of the FT500. The market to book value also was positively related with the first day return but with less significance than the PE ratio. The market volatility positively affects the first day returns even though in some regressions it was not significant.

The dummy for the method of the IPO was significant indicating that IPOs made with the method of placing have higher returns (regression No 7) than those made with other methods as found in Levis (1993). A IPO made with the method of placing has approximately 2.52% higher first day return than an IPO made with other methods once other factors are accounted for.

The proxies we use for economic conditions have an effect on the first day returns. The monthly change rate of the coincident indicator (regressions No 1 and 2) have a positive effect on the first day returns indicating that as economic conditions are improving, first day returns are increasing. The first dummy (DUMMY 1) that takes the value of 1 if the issue takes place during the upturn of the business cycle and zero otherwise has a positive coefficient but insignificant indicating that the average first day returns do not differ across upturns and downturns if we consider the effect of other variables. The second dummy (DUMMY 2), that takes the value of 1 if the issue took place in the second half of the expansion and zero otherwise, was significant. The coefficient of that dummy can be interpreted as that an IPO that comes in the market in the second half of the expansion has 2.04% to 2.9% approximately higher first day returns than the IPO that comes to the market in all other periods, ceteris paribus.

Overall, the purpose of the above regressions was to see what is the effect of economic conditions and the state of the business cycle on the first day returns after allowing for the effect of as many other factors that could also influence the magnitude of first day returns . We find no support whatsoever that first day returns are lower during the upturn of the business cycle as Gerbich (1996) suggests. All the evidence we present, point to the direction that first day return are not lower when economic conditions are good. We can not provide support to the story of Choe, Masulis and Nanda (1993) and Gerbich (1996) that during the upturn of the business cycle, adverse selection costs for IPOs are lower. Choe, Masulis and Nanda (1993) argue that during periods of improving economic conditions, the uncertainty about the intrinsic value of firms' assets and its future growth opportunities diminishes and therefore a seasoned equity issue made during the expansion phase of the business cycle should be regarded as a less negative signal about the value of the firm relative to a SEO made during the downturn of the cycle(for more on this issue see section 2.3.2). We can not apply that way of thinking in the case of UK IPOs. An improvement in economic conditions does not reduce the adverse selection costs associated with an IPO as these are expressed by the first day returns. That could indicate two things: either that improved economic conditions do not reduce the uncertainty about the true value of the IPO and therefore do not reduce first day returns or that the magnitude of the underpricing is not affected by the degree of uncertainty. The fact that previous studies provide strong evidence that first day returns decrease when the uncertainty for the true value of the IPO diminishes, (Ritter 1986, Miller & Reilly 1987, James & Weir (1990), Michely &Shaw (1994)) makes us discard the second possibility and believe that the improvement in economic conditions does not have a significant effect in reducing the uncertainty surrounding the true value of the IPO.

Gerbich (1996) however argues that IPO activity in the UK is higher during the upturn of the cycle because the improvement in economic conditions causes a reduction in the first day returns. He does not establish however a direct relation between the state of the business cycle and first day returns as we do in our study but uses an unnecessary "intermediary" to prove his point. He argues that during the middle and last phases of the expansion, IPOs come in shorter day intervals relative to the downturn of the cycle. On average the number of trading days between two IPOs is 2.4 in the middle and 2.85 in the last phase of the upturn. In the first phase of the recession, IPOs come every 2.71 days on average and that period increases to 3.81 and 5.64 days in the last two phases of the recession respectively. Following that, he ranks all his IPOs (1089) according to the number of trading days from the previous IPOs. The 109 IPOs (10% of his sample) with the lower duration (on average these 109 IPOs come 0.37 days after the previous one) had the lower first day returns and the 109 IPOs with the higher duration (12.02 days) had the higher first day returns. The positive relation between duration and average first day returns however exists only between the two extreme deciles and is not monotonic. In other words, Gerbich (1996) argues that during improving economic conditions, IPOs come into the market in shorter intervals and when IPOs come in shorter intervals, first day returns are smaller arguing finally that during improving economic conditions average first day returns are smaller. As we find however that is not the case. Gerbich's (1996) results are sensitive to the use of the duration methodology.

An improvement in economic conditions does not reduce the average first day return for IPOs and so the high equity financing in the upturn of the business cycle can not be driven by reduced first day returns. The question that arises is what drives IPO activity in the UK?. The answer is left in the next section where we investigate the effect of macroeconomic conditions on the IPO activity.

5.4.Regression Analysis of the IPO Activity.

This section tries to find what are the macroeconomic forces that drive the IPOs activity. Most importantly however we want to see what is the relation between IPO volume and economic conditions and adverse selection costs associated with the IPOs after we take into account some important macroeconomic variables which may also affect IPO volume. In tables 5.8 and 5.9 we present the results of the monthly time-series regression analysis where the dependent variable is the number of IPOs and the amount of capital raised from IPOs per month in real terms excluding privatisations (prices December 1996) respectively and as independent variables we use a number of macroeconomic factors which we treat as control variables. The distribution of the number of IPOs per month and the distribution of amount of capital raised from IPOs per month from January 1981 to December 1996 is not normal and so we use the Log of the number of IPOs per month and the log of the amount of capital raised from IPOs. The log of the number of IPOs per month in the above period is normally distributed with a Jarque-Bera test statistic of 5.9 which rejects the hypothesis of not normality at 5%[7]. The log of the amount of capital raised from IPOs per month from January 1981 to December 1996 is normally distributed with a Jarque-Bera test statistic of 1.62 which rejects the hypothesis of not normality at very high levels.

Interest rates are represented in the regressions by the monthly change rate of the 3-month treasury bill and the Long Term Government bonds. As interest rates increase, the cost of borrowing increases and therefore managers may look for alternative sources of finance such as capital. Therefore the substitution effect suggests a positive relation between interest rate changes and IPO activity.

As a measure of the level of the stock market we use 30, 60 and 90 day cumulative returns of the FT All Share (MARKET RUN UP). We also use a variable that can capture the level of the stock market with regards to its recent past, the ratio of the 3-month average over the 3-year average. High market returns and high levels of the stockmarket may create an attractive environment to issue equity since issues can be priced at higher levels. So, a positive relation between market returns or the level of the market and IPO volume is expected.

According to Gerbich (1996), market volatility positively affects the amount of capital raised from IPOs. Increased market volatility could indicate high information processing and therefore reduced market uncertainty which could lead to more capital raised from IPOs. Byrne & Rees (1996) however, find a negative relation between the market volatility and the number of IPOs. We intend to clarify the effect of the volatility on IPO activity by using 30, 60 and 180 day market volatility (VOLATILITY) to test if volatility has any effect on the IPO activity.

[7] Jarque-Bera is a test statistic for testing whether the series is normally distributed and it measures the difference of the skewness and kurtosis of the series from those of the normal distribution. Under the null hypothesis of a normal distribution, the Jarque-bera statistic is distributed as X^2 with 2 degrees of freedom. The reported probability is the probability that a Jarque-Bera statistic exceeds the observed value under the null. A small probability value leads to the rejection of the null hypothesis of a normal distribution. For the distribution of the log of the number of IPOs per month we can not reject the null hypothesis of normality at 5% but we reject the hypothesis of normality at 1%.

To test if first day returns are negatively related with IPO activity as Gerbich (1996) argues, we use as independent variable the average first day returns of all the IPOs that went public in the previous quarter. Similar variables for the previous 6 and 12 months were also used. If the magnitude of the first day returns is of concern to managers in the timing of the IPO we should find a negative and significant relation between the average first day returns of the recent IPOs and the IPO volume.

Last but not least, we use a number of economic indicators to see if the improvement in business conditions causes an increase in the IPO activity. Two dummy variables are used. The first dummy (DUMMY 1) takes the value of 1 if the month is classified as HOT (Upturn of the business cycle) and 0 if the month is classified as COLD (downturn of the business cycle). The second dummy (DUMMY2) takes the value of 1 if the month is during the second half of the expansion and zero otherwise. The Cochrane-Orcutt method is used to correct for the serial correlation of the errors. T- Statistics are given in parentheses below the coefficients. The results are in tables 5.8 (Number of rights issues per month as dependent variable) and table 5.9 (amount of capital raised per month as dependent variable).

We find that the market return is not significant in explaining the number of IPOs per month. We use the 60 day cumulative FTA SHARE PRICE INDEX return but it was not significant even though it has a positive coefficient. The use of 30, 90 and 180 day cumulative FTA returns also produced insignificant coefficients(not reported). Our results are similar with the result of Byrne & Rees (1996) who find insignificant relation between the IPO activity and the market return. Gerbich (1996) reports a positive and highly significant coefficient for the market level. He uses however the 3-month average of FT ALL SHARE INDEX to its 3 year average. When we used that variable (regressions 5 to 10) instead of the 60-day cumulative FTA returns we found similar results with Gerbich (1996). When the market is high relative to its recent past, IPO activity increases. The slope for the market level was significant usually at 10% level of significance. According to our findings when the stock market is high relative to its recent past it affects the timing decision of the managers.

TABLE 5.8:REGRESSION ANALYSIS OF THE NUMBER OF INITIAL PUBLIC OFFERINGS PER MONTH (1981-1996)

The regressions we run had the following format:

Log(Number of IPOs) = Constant + Log(1+Market Run up) + Log(1+Market Level) +Log(1+change in 3-month treasury Bills)+ Log(1+change in Government Bonds) + Log(Volatility) + Dummy1 + Dummy2 + Log(1+Average first day returns)

	Constant	MARKET RUN UP 60 days	Market Level	Change in 3 month T-Bill	Change in Govern. Bonds	Volatility of 60 trading days of FT ALL SHARE	DUMMY 1 (1 if expansion, 0 otherwise	DUMMY2 (1 if Second half of expansion, 0 otherwise	Change in Coinciden t indicator	Average First day returns During Previous 3 months	R^2
1	1.47 (8.03)	0.068 (0.07)				-1.06 (-0.96)	0.30 (1.93)			2.02 (1.59)	21.4%
2	1.54 (9.72)	0.31 (0.33)				-1.13 (-1.04)		0.46 (2.35)		1.65 (1.32)	22.5%
3	1.57 (9.12)	0.63 (0.06)		-0.08 (-0.82)		-1.48 (-1.37)	0.45 (2.52)			1.24 (1.02)	19.2%
4	1.68 (10.7)	0.33 (0.34)		-0.76 (-0.78)		-1.47 (-1.07)		0.51 (2.64)		0.91 (0.74)	19.4%
5	-1.16 (-0.76)		3.51 (1.73)			-0.82 (-0.80)	0.22 (2.20)			1.06 (0.82)	22.8%
6	-1.41 (-1.00)		3.89 (2.12)			-1.03 (-1.04)		0.43 (2.36)		0.58 (0.47)	24.3%
7	-0.09 (-0.06)		2.22 (1.62)	-0.08 (-0.86)		-1.33 (-1.33)	0.38 (2.08)			0.63 (0.50)	19.8%
8	-0.67 (-0.48)		3.11 (1.71)	-0.08 (-0.85)		-1.41 (-1.45)		0.47 (2.56)		0.093 (0.76)	20.8%
9	0.013 (0.01)		1.99 (1.91)		-0.04 (-1.13)	-0.80 (-0.78)	0.22 (2.14)			1.29 (0.94)	17.1%
10	-0.20 (-0.13)		2.31 (1.65)		-0.013 (-0.13)	-1.06 (-1.08)		0.48 (2.35)		0.95 (0.73)	19.2%

The Cohrane-Orcutt method is used to adjust for the serial correlation of the errors. The dependent variable is the lof og the number of IPOs per month. MARKET RUN UP is the continuously compounded market returns (FT ALL SHARE) over the 60 trading days prior to the beginning of the month of the offering MARKET LEVEL is the 3 month average of the FT ALL SHARE PRICE INDEX over the 3-year average of the FT ALL SHARE PRICE INDEX measured prior to the beginning of the offering VOLATILITY is the daily market return (FT ALL SHARE) measured over 60 trading days prior to the beginning of the month of the offer. DUMMY 1 takes the value of 1 if the month is classified as HOT (Upturn of the business cycle) and 0 if the month is classified as COLD (downturn of the business cycle). DUMMY2 takes the value of 1 if the month is during the second half of the expansion and zero otherwise. AVERAGE FIRST DAY RETURNS is the average first day returns of all the IPOs that came to the market is the previous quarter prior to the beginning of the month. Change in 3-MONTH TREASURY BILLS AND LONG TERM GOVERNMENT BONDS are measured over 3 months prior to the month of the offering

Interest rates do not significantly affect the number of IPOs per month. An increase in long term government bonds from the previous month cause a decrease in the number of firms making an IPO but was not significant (regressions 9 and 10). The change in short-term interest rates is negatively related to the IPO activity but the coefficients are also not significant at any of the regressions (3,4,7 and 8).

Volatility is negatively related to the IPO activity but with no statistical significance. We used 30, 60, 180 day windows for the market volatility but none were significant. We can not support the argument of Gerbich (1996) that high information processing which causes volatility to rise and information asymmetry to drop results to an increase in IPO activity.

Gerbich (1996) argues that the IPO activity increases when the average first day returns during the previous quarter are low. He reports a negative and highly significant relation between the average first day returns of the previous quarter and the amount of capital raised from IPOs in the current month. Nevertheless, we do not find that the average first day returns of all the IPOs that came into the market in the previous quarter have any effect on the IPO activity. In the last column in table 5.8 we use as an explanatory variable the average first day returns of all IPOs that came to the market in the previous term. None of the coefficients are negative. These results further strengthen our findings that IPO activity is not driven by lower adverse selection costs. We also used the average first day returns of the IPOs that went public during previous 6 and 12 months instead of the previous 3 but none produced significant negative results (not reported). The bottom line is that we do not provide support to the argument that IPO activity is higher when underpricing is low. To the contrary we find that when average first day returns are high IPO activity is high but the positive relation is not statistically significant.

The difference in our results from Gerbich (1996) may be caused by two factors. First, Gerbich's (1996) calculation of the average first day returns of the previous quarter is different. He averages the monthly averages of the previous three months. So, for example he calculates the average first day returns for July, August and September 1989 and he calculates the average first day returns of the previous quarter for month October 1989 as the averages of July, August and September. In this way however he gives the same weight to the three months irrespective of the number of IPOs in each one of them. We calculate the average first day returns as the average of all IPOs that went public in the previous quarter and not as the averages of the monthly average as Gerbich does. In that way we do not give the same weight to a month with low activity with a month with high activity. For example in July 1989 we had 10 IPOs, in August only 2 and in September 3 IPOs and their average first day returns of all the 15 IPOs is 13.5%. By using Gerbich (1996) methodology average first day return would have been 12.5% (the average of July 11.6% plus the average of August 16.8% plus the average of September 9.2% divided by 3).

In addition to the above, we have extended the sample up until 1996 while Gerbich's sample was up to 1993. Furthermore, for the Issues that KPMG provided no details about the amount of capital raised from IPOs we looked up into the London Quality of Market monthly and London Stock Exchange Fact Book that provide details about new issues. Wherever we found the missing information we used them in order to extend the size of the sample. Even though the IPOs for which we found additional details were not many they obviously make a difference. Therefore, Gerbich's (1996) results appear to be period and sample specific.

As argued in Choe, Masulis and Nanda (1993) and Gerbich (1996), the equity issuance activity increases during the upturn of the business cycle. As economic conditions are improving, more firms resort to equity financing. The dummy that takes the value of 1 if the month is during the upturn of the cycle was significant. That increase seems to concentrate in the second half of the expansion, the dummy 2 that takes the value of 1 if the IPO takes place in the second half of the expansion has higher and more significant coefficients. More firms make an IPO during the second half of the expansion relative to all other periods of the cycle as the coefficient of the DUMMY 2 suggests.

In table 5.9 we have the results of the regressions when the dependent variable is the amount of capital raised from IPOs per month in real terms excluding the privatisations. The dummy that takes the value of 1 if the month was during the second half of the upturn of the cycle was statistically significant in all the regressions with test-statistics ranging from 2.39 to 2.58. Dummy 1 however was less significant and in some regressions it was marginally insignificant.

The market returns and the market level were not significant in any of the regressions. The change in short term interest rates was negatively and marginally at 10% related with the IPO activity. The coefficients for the volatility are negative and highly significant showing that volatility adversely affects the amount of capital raised from IPOs. In the last column of table 5.9 we use as an additional independent variable the average first day returns of all IPOs that went public in the previous 3 months. All the coefficients are positive but insignificant showing no relation between the magnitude of first day returns for the recent IPOs and the amount of capital raised from IPOs in the current month.

TABLE 5.9:REGRESSION ANALYSIS OF THE AMOUNT OF CAPITAL RAISED FROM INITIAL PUBLIC OFFERINGS PER MONTH (1981-1996)

The regressions we run had the following format:

Log(Amount of capital raised from IPOs at month t) = Constant + Log(1+Market Run up) + Log(1+Market Level) +Log(1+change in 3-month treasury Bills)+ Log(1+change in Government Bonds) + Log(Volatility) + Dummy1 + Dummy2 + Log(1+Average first day returns)

	Constant	MARKET RUN UP 60 days	Market Level	Change in 3 month T-Bill	Change in Govern. Bonds	Volatility of 60 trading days of FT ALL SHARE	DUMMY 1 (1 if expansion, 0 otherwise	DUMMY2 (1 if Second half of expansion, 0 otherwise	Change in Coincident indicator	Average First day returns During Previous 3 months	R^2
1	4.24 (11.07)	-1.65 (-0.74)				-6.15 (-2.52)	0.65 (1.67)			2.91 (1.04)	14.6%
2	4.40 (13.4)	-0.91 (-0.42)				-6.27 (-2.67)		1.00 (2.53)		2.02 (0.74)	16.3%
3	4.45 (10.7)	-1.57 (-0.69)		-0.35 (-1.55)		-6.08 (-2.47)	0.79 (1.76)			2.03 (0.70)	19.7%
4	4.59 (12.8)	-1.03 (-0.45)		-0.35 (-1.53)		-6.40 (-2.67)		1.06 (2.48)		1.29 (0.47)	21.2%
5	3.47 (1.01)		1.01 (0.22)			-5.30 (-2.35)	0.60 (1.46)			2.01 (0.66)	14.3%
6	3.10 (0.99)		1.69 (0.41)			-5.73 (-2.65)		0.99 (2.49)		1.11 (0.37)	16.3%
7	3.43 (0.87)		1.34 (0.26)	-0.34 (-1.52)		-5.32 (-2.28)	0.70 (1.48)			1.20 (0.37)	19.4%
8	2.80 (0.80)		2.34 (0.51)	-0.35 (-1.53)		-5.83 (-2.60)		1.04 (2.39)		0.26 (0.08)	21.2%
9	4.24 (1.02)		-0.11 (-0.21)		0.018 (0.06)	-5.21 (-2.24)	0.73 (1.58)			3.17 (0.94)	18.7%
10	4.06 (1.07)		0.28 (0.056)		-0.069 (-0.24)	-5.74 (-2.581)		1.23 (2.58)		2.57 (0.79)	20.9%

The Cohrane-Orcutt method is used to adjust for the serial correlation of the errors. The dependent variable is the lof og the number of IPOs per month. MARKET RUN UP is the continuously compounded market returns (FT ALL SHARE) over the 60 trading days prior to the beginning of the month of the offering MARKET LEVEL is the 3 month average of the FT ALL SHARE PRICE INDEX over the 3-year average measured prior to the beginning of the offering VOLATILITY is the daily market return (FT ALL SHARE) measured over 60 trading days prior to the beginning of the month of the offer. DUMMY 1 takes the value of 1 if the month is classified as HOT (Upturn of the business cycle) and 0 if the month is classified as COLD (downturn of the business cycle). DUMMY2 takes the value of 1 if the month is during the second half of the expansion and zero otherwise. AVERAGE FIRST DAY RETURNS is the average first day returns of all the IPOs that came to the market is the previous quarter prior to the beginning of the month. Change in 3-MONTH TREASURY BILLS AND , LONG TERM GOVERNMENT BONDS and coincident indicator are measured over 3 months prior to the month of the offering

We also used instead of the number of IPOs and amount of capital raised per month, the number of IPOs and amount of capital per quarter as dependent variables with analogous transformations to the independent variables without getting qualitative different results. Economic conditions still had high positive and significant coefficients with volatility and interest rates negatively related but marginally significant. Also, at no regression that used quarterly data, were average first day returns of the previous quarter significant in explaining the number of IPOs or the amount of capital raised in the current month.

Our regression analysis indicates that more firms make an IPO during the expansion phase of the business cycle and when the stock market is high relative to its recent past. Short term interest rates have little effect on the IPO volume while market volatility has a significant negative impact on the amount of capital raised from IPO. The degree of underpricing has no effect whatsoever on the timing of IPO volume.

5.5. Do Firms Time the IPO when their Share prices are Overvalued?

A lot of research has pointed to the exploitation of overvaluation as the driving force behind the timing of IPOs. Ritter (1991) and Loughran and Ritter (1995) find a significant underperformance for firms conducting an IPO. They suggest that firms make an IPO during periods when their stock is overvalued. Spiess and Affleck-Graves (1995) also argue that managers time the equity issue when the firm is overvalued. They report a significant underperformance of Seasoned Equity Offers which is caused by managers deliberately timing the issue at periods when the shares are overvalued. Long run IPO underperformance is not a US phenomenon only. Loughran, Ritter and Rydqvist (1994) find evidence of post-IPO underperformance in 6 world markets. Levis (1993) reports that UK IPOs underperform relative to a number of indexes. Levis (1993) does not find however a relation between the intensity of IPO activity and their future performance. In other words, if firms make an IPO when their shares are overvalued then we should find that IPOs that come to the market in years of heavy volume should have the worst underperformance. Levis (1993) however, compares the IPO with a market index. He uses the FTA share price index and the HGSC small companies index. The last index may take into account the size effect but it does not take into account the industry and the market to book effect.

If exploitation of overvaluation is a major driving force of the time series variability of the IPO activity, then IPOs that come in the market in periods of heavy volume must be more overvalued and therefore should have higher levels of underperformance relative to the IPOs that come to the market in periods of Light IPO activity which are periods when IPOs are less overvalued and therefore should have lower levels of underperformance.

In this section we test whether UK IPOs that go public in Heavy IPO periods have worst post-IPO performances relative to IPOs that come into the market in light volume periods. The null and alternative hypothesis are:

*Ho: The IPOs that come into the market in **Heavy** IPO volume periods have **similar** Post-IPO performances with the IPOs that come into the market in **Light** IPO volume periods*

*He: The IPOs that come into the market in **Heavy** IPO volume periods have significantly **worst** Post-IPO performances relative to the IPOs that come into the market in **Light** IPO volume periods.*

If HOT period IPOs are significantly worst performers relative to COLD period IPOs then we will reject the null hypothesis in favour of the alternative one. To reject the null hypothesis of similar performance of HOT and COLD period IPOs we compare the post-IPO performances of IPOs that came into the market in Heavy and light IPO volume periods respectively. In order to classify periods as HOT or COLD we rank all months from January 1981 to December 1996 (192 months) according the 3-month moving average of the amount of capital raised from IPOs in real terms excluding privatisations. The 48 months (25% of the sample) with the highest IPO activity in terms of capital raised are classified as HOT months. The 48 months with the lowest IPO activity are classified as COLD months. The remaining 96 months are classified as OTHER.

First we need to find whether IPO firms underperform or not. For this purpose we use four measures of post-IPO performance. First we use the monthly buy and hold returns without any adjustments. The second measure of Post-IPO performance is the buy and hold returns of IPOs adjusted for the movements in the FTA. The final two measures of performance are the buy and hold returns adjusted for industry and size and the buy and hold returns adjusted for industry and market to book value. For the last two measures the abnormal returns is the difference between the return of the IPO and a matching firm. The matching firm is chosen from the same industry as with the IPO firms and with similar market to book or market value. More details about the ways used to calculate the post-IPO performances are in section 4.4

The results of Post-IPO performance are presented in figure 5.5 and table 5.10. We find that UK IPOs exhibit positive buy and hold returns for the 5 post-IPO years. IPOs offer a 24.60% buy and hold return by the end of the first year to the investors that purchased the IPO at the offer price. The average Buy and Hold return to the investors that purchased the IPO at the offer price increases to 30.62% by the end of the second year. From that point, average buy and hold returns show no big changes and stay around the area of 30% up until month 57. In the last 3 months IPO buy and hold returns increase slightly to an average 5 year buy and hold return to the investors that purchased the IPO at the offer price of 36.10%. The issue however whether investors are able to buy the IPOs at the offer price is in dispute. During an IPO issuing process it is common that the demand for the shares to outstrip the supply and therefore a rationing occurs. Investors do not get the full amount in shares they required but only a portion of that. Therefore, investors that want to become shareholders in the IPOs often have to buy the shares in the aftermarket, during or after the first trading day. Therefore, an investors can not always enjoy the very high first day returns of the IPOs and the inclusion of these first day returns in the calculation of the long run performances is not entirely correct. Therefore, if the large first day returns of 11.7% are removed from the long run performances we can see that IPOs offer a 5 year buy and hold return to the investor that purchased the IPO at the end of the first trading day of 24.4%.

When we adjust the IPO returns for the movements in the FTA the picture changes. Relative to the FTA, IPO returns continue to increase up until month 6 when the average buy and hold return to the investors that purchased the IPO at the offer price is 13.87%. At the end of the first year, average buy and hold return to the investors that purchased the IPO at the offer price and adjusted for the FTA is 12.11%. Returns drop to 5.60% at the end of the second year and become negative by the end of the third year with an average buy and hold return of -4.85%. IPOs continue to do badly relative to the FTA and average buy and hold returns continue to drop reaching -15.27% at the end of the 4th year. The lower point is reached at the end of month 57 where the average buy and hold return to the investors that purchased the IPO at the offer price is -22.14% to reach eventually a 5 year buy and hold average return of -19.07%. IPOs start to significantly underperform by the end of month 34 if first day returns are accounted for. If the high first day return are not taken into account then obviously the IPOs underperformance relative to the FTA is increased to -16.55% by the end of year 3 and to -30.77% by the end of year 5. The use of the FTA as a benchmark however is not the best one since the FTA is a market value weighted index and is heavily influenced by the largest companies in the London stock exchange while IPO firm are usually small firms. Therefore, the FTA is biased for small caps. To correct for this bias we use the industry/market value adjusted performance which according to Barber and Lyon (1997) is the only unbiased measure of performance. The next measure of performance is more appropriate since it takes into account the size of the IPO firm.

IPOs underperformance that includes the high first day returns is not significant when we look at the next two measures of Post-IPO performance. After adjusting the IPO returns for industry and market value and taking into account the first day returns we find that average buy and hold returns increase until month 8 and reach 18.17%. From that point onwards returns follow a downwards slope. At the end of year 1 average buy and hold returns that include the first day returns are 14.12% and become 9.84% at the end of the second year. Average buy and hold returns become insignificant from zero by the end of year 3 (1.89%). At the end of year 4 average returns that include the first day returns turn negative, -3.10% (the lowest point) but are not significantly different from zero. The 5 year average buy and hold return that includes the first day returns is -1.82%. If the first day returns are not accounted for, the buy and hold performances of IPOs after being adjusted for the industry and market value are much worst. The average Buy and Hold return by the end of year 1 if first day returns are not taken into account is 2.42%. By the end of year 3, the average buy and hold returns if first day returns are not taken into account is -1.86% and drop to -13.52% by the end of year 5, which is significantly negative with a test statistic of -1.98.

When we used the other measure of Post-IPO performance that is adjusted for industry and market to book value we find results similar with the previous. IPOs average buy and hold returns adjusted for industry and market to book value that include the first day returns reach the highest point at month 9 (14.82%) and from that point returns follow a downwards slope dropping to 13.77% at the end of year 1 and to 11.39% at the end of year 2 with the inclusion of first day returns. As with the previous measure, average IPO buy and hold returns become insignificantly different from zero by the end of year 3, (5.64%). At the end of 4th year returns drop further to -3.83% and reach 0.21% at the end of the year 5 if first day returns are taken into account but were never significantly different from zero. If first day returns are not taken into account then IPOs buy and Hold performance adjusted for industry and market to book value are 2.07% by the end of year 1 and drop to -6.06% by the end of year 3 which has a test statistic of -1.67.The 5 year buy and hold performance is -11.49% if first day returns are not taken into account with a test statistic of –2.14.

The conclusions that can be drawn from the above results is that once the high first day returns are accounted for, the issue whether IPOs underperform becomes a contested one. Certainly IPOs do not reduce the wealth of their shareholders if no adjustments are made. IPOs offer a 5 year buy and hold return of 36.71%. Comparing however IPO returns with a market wide benchmark such as the FTA reveals that IPOs are poor investments and the average investor would be better off by 20% by investing in a portfolio of the FTA firms relative to a portfolio of IPOs. The returns that are adjusted for industry/ market value and industry/market to book value however reveal that IPOs underperformance is small and not statistically significant. The size of the IPO sample however in the two later cases is reduced relative to the full number of the IPOs used in the two other measures of Post-IPO performance. That happens due to the lack of information about the industry classification and market to book values and market values for some of the IPOs. Therefore, the power of the statistical tests in the last two measures of Post-PO performance is slightly reduced.

TABLE 5.10: POST IPO PERFORMANCE OF IPOs THAT WENT PUBLIC IN THE PERIOD FROM 1981 TO 1996

Month from the Listing	NORMAL BUY AND HOLD RETURNS	*Test Statistic (difference from zero)*	FT ADJUSTED BUY AND HOLD RETURNS	*Test Statistic (difference from zero)*	INDUSTRY AND MARKET VALUE BUY AND HOLD RETURNS	*Test Statistic (difference from zero)*	INDUSTRY AND MARKET TO BOOK VALUE BUY AND HOLD	*Test Statistic (difference from zero)*
1st Month	12.40% (1019)	*16.75*	10.80% (1019)	*14.66*	11.56% (871)	*12.26*	10.97% (879)	*11.48*
3rd Month	17.00% (1019)	*19.68*	13.42% (1019)	*15.32*	12.85% (949)	*9.98*	11.16% (958)	*9.53*
6th Month	20.28% (1019)	*18.75*	13.87% (1019)	*13.19*	15.67% (948)	*8.80*	12.07% (958)	*7.22*
9th Month	22.29% (1019)	*17.42*	12.16% (1019)	*10.07*	15.56% (948)	*7.13*	14.82% (957)	*5.25*
12th Month	24.60% (1019)	*16.73*	12.11% (1019)	*8.59*	14.12% (944)	*6.45*	13.77% (958)	*6.26*
15th Month	26.33% (1019)	*16.07*	10.91% (1019)	*6.94*	13.14% (943)	*5.31*	13.09% (956)	*5.90*
18th Month	26.28% (1018)	*14.41*	07.82% (1018)	*4.45*	12.37% (942)	*4.76*	12.44% (956)	*4.86*
21st Month	27.80% (1017)	*13.88*	05.60% (1017)	*2.89*	10.02% (930)	*3.27*	11.47% (944)	*3.80*
24th Month	30.62% (997)	*14.20*	05.60% (997)	*2.68*	09.84% (907)	*2.82*	11.39% (926)	*3.37*
27th Month	30.58% (985)	*13.10*	02.91% (985)	*1.29*	06.73% (882)	*1.72*	09.52% (906)	*2.18*
30th Month	30.50% (959)	*12.22*	00.92% (959)	*0.38*	05.20% (853)	*1.34*	08.10% (883)	*1.72*
33rd Month	30.83% (944)	*11.73*	-02.41% (944)	*-0.95*	05.22% (842)	*1.04*	06.53% (872)	*1.19*
36th Month	31.45% (928)	*11.27*	-04.85% (928)	*-1.81*	01.89% (825)	*0.29*	05.64% (861)	*0.46*
39th Month	31.93% (922)	*10.92*	-07.63% (922)	*-2.71*	03.72% (815)	*0.38*	02.85% (850)	*0.10*
42nd Month	30.72% (911)	*10.00*	-11.02% (911)	*-3.71*	00.14% (791)	*0.27*	02.37% (833)	*0.07*
45th Month	30.79% (893)	*9.54*	-13.18% (893)	*-4.20*	-02.12% (782)	*-0.55*	-01.09% (823)	*-0.43*
48th Month	31.68% (870)	*9.58*	-15.27% (870)	*-4.77*	-03.10% (762)	*-0.64*	-03.83% (808)	*-0.77*
51st Month	31.47% (849)	*9.03*	-17.74% (849)	*-5.23*	-03.07% (729)	*-0.52*	-01.19% (779)	*-0.90*
54th Month	30.71% (804)	*8.23*	-20.09% (804)	*-5.53*	-02.59% (674)	*-0.41*	-01.38% (734)	*-0.93*
57th Month	31.67% (769)	*8.01*	-22.14% (769)	*-5.74*	-02.65% (647)	*-0.35*	-02.06% (713)	*-0.98*
60th Month	36.10% (728)	*8.83*	-19.07% (728)	*-4.77*	-01.82% (612)	*-0.22*	00.21% (681)	*0.65*

The sample includes Initial Public Offers made with the method of offer for sale, offer for subscription or placings in the period Jan-1981 to Dec 1996. The return are calculated as Buy and Hold returns. The FT adjusted returns are calculated as the difference between the Normal buy and hold return of IPO i at month t and the buy and hold return of the FT ALL share price index at the same month. The industry and market to book adjusted buy and hold returns are made by subtracting from the buy and hold return of IPO i until month t the monthly buy and hold return of a firm in the same industry and closest market to book value with the IPO firm. The industry and market size adjusted buy and hold returns are made by subtracting from the monthly buy and hold return of IPO i until month t the buy and hold return of the firm in the same industry and closest market value with the IPO firm i.

The look at the percentage of firms that outperformed and underperformed in table 5.11 shows that IPOs underperformance is not overwhelming once first day returns are accounted for. Only for the buy and hold returns that are adjusted for the FTA are the IPOs that underperformed more than the IPOs that outperformed. 55% of all IPOs offered inferior buy and hold returns relative to the FTA by the end of year 5 with the remaining 45% outperforming the FTA. The use of the two firm matching benchmarks however revels no significant differences in the percentage of firms that underperformed and outperformed by the end of years 4 and 5. Approximately 50% of IPOs outperformed and 50% underperformed relative to the industry/market value and industry/market to book value by the end of year 5.

Whether however first day returns should be used in calculations of Post-IPO performances is an issue in dispute. Investors can benefit from the high first day returns if they are able to buy the IPOs at the offer price. However, it is common to see the demand for the new shares to outstrip the supply. Therefore a rationing occurs and each investor takes a portion of the shares he/she demanded. For investors unable to buy the IPO at the offer price it makes no sense to say that IPOs do not underperform since those that buy at the end of the first day are significantly worst off since they do not benefit from the last first day returns and by the end of the fifth year they are worst off by as much as 30% (adjusted for FTA) and 10% for industry and market to book or market value adjusted.

TABLE 5.11:PERCENTAGE OF IPOs THAT UNDERPERFORMED AND OUTPERFORMED RELATIVE TO VARIOUS INDEXES

Month Relative to the Listing	**12**	**24**	**36**	**48**	**60**
Percentage of IPOs that **outperformed** WITH NO ADJUSTMENTS	71%	70%	67%	67%	66%
Percentage of IPOs that **underperformed** WITH NO ADJUSTMENTS	29%	30%	33%	33%	34%
Percentage of IPOs that **outperformed** relative to the FTA	61%	55%	49%	46%	45%
Percentage of IPOs that **underperformed** relative to the FTA	39%	45%	51%	54%	55%
Percentage of IPOs that **outperformed** relative to the industry and market value	60%	57%	51%	49%	51%
Percentage of IPOs that **underperformed** relative to the Industry and market value	39%	43%	49%	51%	49%
Percentage of IPOs that **outperformed** relative to the Industry and market to book value	60%	58%	53%	50%	51%
Percentage of IPOs that **underperformed** relative to the Industry and market to book value	39%	42%	47%	50%	49%

The hypothesis we test here however is not whether IPOs underperform or not but whether there is relation between the intensity of IPO activity and the post-IPO performance. If IPO volume is driven by overvaluation exploitation, we should expect that periods when managers are able to achieve more overvalued prices for their IPOs should be periods of heavy IPO volume. If that is the case, then the IPOs that went public in periods of heavy volume (and therefore have exploited overvaluation the most) should have worst post-IPO performances relative to IPOs that went public in periods of light IPO activity (and so are less overvalued). We investigate the relation between the IPO volume and underperformance. next. We calculate the average post IPO performance of all IPOs that came to the market at

HOT, COLD or OTHER periods. The results are in table 5.12 and figures 5.5, 5.6, 5.7 and 5.8 for the four measures of performances respectively.

In panel A of table 5.12 we have the Post-IPO buy and hold returns without any adjustments of HOT,COLD and OTHER period IPOs. These performances are also plotted in figure 5.6. We find that HOT market IPOs have significantly worst performances than COLD market IPOs even from the first year after the listing. The average buy and hold return of HOT market IPOs by the end of year 1 is +16.80% and the average buy and hold return of COLD market IPOs for the same period is +30.87% significantly higher than the return of HOT IPOs with a test statistic of 2.50. The spread between HOT and COLD market IPOs increases to -34% in the second year a difference which has a test statistic of -4.82. By the end of the third year the difference between HOT and COLD market IPOs increases to -43%. At the end of year 4, HOT market IPOs have an average buy and hold return of 13.51% while COLD markets IPOs have an average buy and hold return of 60.22%. The negative spread between HOT and COLD markets IPOs is -46.26% by the end of the 5 year period, a difference with a test statistic of -4.16. HOT market IPOs have significantly worst performances not only when compared with COLD market IPOs buy also when compared with all the rest of the IPOs (both COLD and OTHER periods IPOs). The test statistics of the difference between HOT and the rest of the IPOs (both COLD and OTHER periods IPOs) are in the bottom row of Panel A and range from -3.22 to -4.51. Overall, our results on the Post-IPO buy and hold performance of HOT and COLD markets IPOs reveals that HOT market IPOs are significantly worst long run performers relative to the COLD market IPOs. That can be clearly seen in figure 5.6. The performance of HOT market IPOs is represented by the red line and the performance of COLD market IPOs by the blue line. There is a clear difference between the performances of the two group of IPOs. COLD market IPOs significantly outperform the HOT market IPOs.

Similar conclusions are drawn when we look at the Post-IPO performance adjusted for movements in the FTA (panel B of table 5.12 and figure 5.7). From year 2 onwards we find the HOT markets IPOs are significantly worst performers relative to the COLD market IPOs. The negative spread ranges from -20.64% by the end of year 2 to -37.65% by the end of year 5. In figure 5.7 we have plotted the FTA adjusted post-IPO buy and hold performances of HOT and COLD IPOs. It is visually clear that the HOT period IPOs (Red line) perform worst than the COLD market IPOs (blue line).

The negative spread in the buy and hold return between HOT and COLD market IPOs remains even when we use the industry and market value adjusted returns(Panel C of table 5.12) . COLD market IPOs outperform HOT market IPOs by 9.26% at the end of year 1 and by 5.47% by the end of year 2. COLD market IPOs continue to outperform HOT market IPOs by 13.3% at the end of year 3 and by 22.59% at the end of year 4. The 5 year difference between COLD and HOT IPOs is 22.7% in favour of COLD market IPOs. The difference in the performance between HOT and COLD market IPOs is statistically significant from the end of year 3 onwards.

HOT market IPOs perform worst than COLD market IPOs even when we use the industry and market to book value adjusted buy and hold return with a 5 year spread of 39.04% in favour of COLD IPOs (panel D of table 5.12). In figure 5.9 we have plotted the post-IPO performances adjusted for industry/market to book value. The performance of HOT market IPO is represented by the red line and that of the COLD market IPOs by the blue line. COLD market IPOs perform better than HOT market IPOs especially after the third year. The differences in the post-IPO performances of HOT and COLD market IPOs are less statistically significant when we use the industry/market value or industry/market to book value adjusted returns from the FTA adjusted returns partly because of the reduced size of the sample and partly because the higher variance of the abnormal returns that are industry/ market value and industry /market to book value adjusted is higher. For example, the variance of the five year buy and hold returns adjusted for the FTA is 1.09 for HOT and 0.95 for cold IPOs but increases to 8.82 and 3.88 respectively for the industry and market to book value returns. That happens because in the adjustment procedure when we use a matching firms, apart form the variance for the returns of the IPOs we also have the variance from the returns of the matching sample which is bound to be higher from the returns of a market index which does not have as big fluctuations from month to month as the individual stocks.

TABLE 5.12:POST IPO PERFORMANCE ACROSS HEAVY AND LIGHT IPO VOLUME PERIODS

PANEL A

POST IPO BUY AND HOLD PERFORMANCE of HOT, COLD and OTHER period IPOs

Month from the Listing	12th Month	24th Month	36th Month	48th Month	60th Month
PERFORMANCE OF IPOs THAT WENT PUBLIC IN **HOT** PERIODS	16.80% (388)	21.98% (369)	17.56% (328)	13.51% (312)	12.22% (184)
Test statistic *(different from zero)*	*7.89*	*6.60*	*4.13*	*2.66*	*1.60*
PERFORMANCE OF IPOs THAT WENT PUBLIC IN **OTHER** PERIOD	28.90% (474)	29.01% (473)	31.50% (445)	34.78% (403)	38.64% (392)
Test statistic *(different from zero)*	*12.29*	*8.81*	*7.26*	*6.75*	*6.62*
PERFORMANCE OF IPOs THAT WENT PUBLIC IN **COLD** PERIODS	30.87% (157)	56.10% (155)	60.71% (155)	60.22% (155)	58.48% (152)
Test statistic *(different from zero)*	*9.09*	*11.56*	*10.25*	*8.34*	*7.31*
TEST STATISTIC of difference in performance of HOT from COLD IPOs	*-2.50*	*-4.82*	*-5.32*	*-5.10*	*-4.16*
TEST STATISTIC of difference in performance of HOT from both COLD and OTHER IPOs	*-4.51*	*-3.22*	*-3.99*	*-4.42*	*-3.55*

PANEL B

POST IPO BUY AND HOLD PERFORMANCE **ADJUSTED for FTA** of HOT, COLD and OTHER period IPOs

Month from the Listing	12th Month	24th Month	36th Month	48th Month	60th Month
PERFORMANCE OF IPOs THAT WENT PUBLIC IN **HOT** PERIODS	9.14% (388)	1.95% (369)	-11.72% (328)	-29.54% (312)	-34.08% (184)
Test statistic *(different from zero)*	*4.36*	*0.61*	*-2.81*	*-5.89*	*-4.41*
PERFORMANCE OF IPOs THAT WENT PUBLIC IN **OTHER** PERIODS	14.10% (474)	2.87% (473)	-7.77% (445)	-11.27% (403)	-18.03% (392)
Test statistic *(different from zero)*	*6.31*	*0.90*	*-1.87*	*-2.59*	*-3.18*
PERFORMANCE OF IPOs THAT WENT PUBLIC IN **COLD** PERIODS	13.43% (157)	22.59% (155)	18.10% (155)	6.92% (155)	-3.57% (152)
Test statistic *(different from zero)*	*3.98*	*4.98*	*3.13*	*0.96*	*-0.45*
TEST STATISTIC of difference in performance of HOT from COLD IPOs	*-0.76*	*-2.89*	*-3.73*	*-4.04*	*-2.73*
TEST STATISTIC of difference in performance of HOT from both COLD and OTHER IPOs	*-1.14*	*-0.60*	*-1.05*	*-2.60*	*-1.80*

PANEL C

POST IPO BUY AND HOLD PERFORMANCE **ADJUSTED BY INDUSTRY AND MARKET VALUE** of HOT, COLD and OTHER period IPOs

Month from the Listing	12th Month	24th Month	36th Month	48th Month	60th Month
PERFORMANCE OF IPOs THAT WENT PUBLIC IN **HOT** PERIODS	6.93% (357)	8.30% (330)	-1.36% (288)	-9.46% (270)	-11.28% (148)
Test statistic *(different from zero)*	*2.07*	*1.68*	*-0.21*	*-0.89*	*-0.58*
PERFORMANCE OF IPOs THAT WENT PUBLIC IN **OTHER** PERIOD	19.32% (432)	9.62% (425)	0.39% (386)	-5.14% (343)	-3.36% (321)
Test statistic *(different from zero)*	*5.85*	*1.79*	*0.06*	*-0.48*	*-0.29*
PERFORMANCE OF IPOs THAT WENT PUBLIC IN **COLD** PERIODS	16.19% (155)	13.77% (152)	11.94% (151)	13.13% (149)	11.42% (143)
Test statistic *(different from zero)*	*2.95*	*1.31*	*0.91*	*0.86*	*0.68*
TEST STATISTIC of difference in performance of HOT from COLD IPOs	*-1.44*	*-0.47*	*-2.63*	*-2.67*	*-1.62*
TEST STATISTIC of difference in performance of HOT from both COLD and OTHER IPOs	*-2.58*	*-0.55*	*-1.56*	*-1.89*	*-1.38*

PANEL D

POST IPO BUY AND HOLD PERFORMANCE **ADJUSTED BY INDUSTRY AND MARKET TO BOOK VALUE** of HOT, COLD and OTHER period IPOs

Month from the Listing	12th Month	24th Month	36th Month	48th Month	60th Month
PERFORMANCE OF IPOs THAT WENT PUBLIC IN **HOT** PERIODS	9.00% (370)	9.04% (349)	3.38% (321)	-11.39% (309)	-15.96% (231)
Test statistic *(different from zero)*	*2.54*	*1.67*	*0.39*	*-1.00*	*-0.82*
PERFORMANCE OF IPOs THAT WENT PUBLIC IN **OTHER** PERIOD	15.53% (433)	14.85% (423)	3.87% (394)	-1.81% (358)	2.52% (319)
Test statistic *(different from zero)*	*4.82*	*3.51*	*0.58*	*-0.24*	*0.26*
PERFORMANCE OF IPOs THAT WENT PUBLIC IN **COLD** PERIODS	20.25% (155)	7.20% (154)	15.41% (146)	7.62% (141)	23.08% (131)
Test statistic *(different from zero)*	*4.09*	*0.82*	*1.31*	*0.58*	*1.34*
TEST STATISTIC of difference in performance of HOT from COLD IPOs	*-1.85*	*0.18*	*-2.60*	*-2.58*	*-2.53*
TEST STATISTIC of difference in performance of HOT from both COLD and OTHER IPOs	*-1.74*	*-0.56*	*-1.07*	*-1.85*	*-1.82*

The HOT and COLD periods are classified according to the three-month moving average of the monthly amount of capital raised from Initial Public Offers made with the method of offer for sale or offer for subscription in the period January 1981 to

December 1996 (192 months) excluding privatisations and are in Dec 1996 prices. The 25% of all months (48 months) with the highest IPO activity are classified as HOT. The 48 months with the lowest IPO activity are classified as COLD. The remaining 96 months are classified as OTHER.

Our findings strongly suggest that that firms that go public in period of heavy IPO volume have significantly worst post-IPO performances relative to firms that go public in low volume periods. Such results suggest that more capital is raised from IPOs in periods when issuers can achieve higher valuations for their equity offers. HOT market IPOs have more overvalued issues than COLD market IPOs indicating that investors' sentiment is important in the timing of equity issues. Periods of favourable market sentiment create a "window of opportunity" when equity issues can be raised in more favourable terms.

In chapter 8 we make another attempt to see whether the sentiment timing theory can explain the variations in the IPO activity. We use financial analysts' earnings forecasts as a proxy for the market sentiment and see whether more capital is raised from IPOs when analysts optimistic is high.

5.6. Conclusions

In this chapter we tried to find what are the driving forces behind the variability in the IPO activity across time. We focus on two theories that have previously been proposed as being responsible for the time series variation of IPO activity and we conducted our own tests. The first theory argues that variation in investors' sentiment is the driving force behind the variation in IPO activity. We find evidence in favour of that theory. Our sample of IPO firms exhibit underperformance relative to the firms in the same industry and similar market to book or market values once the initial first day returns are not taken into account. If we include the first day returns, IPO firms do not underperform relative to the firms in the same industry and similar market value or same industry and similar market to book value. There are significant variations however in the underperformance according to the intensity of the IPO activity.

Firms that come to the market in periods of heavy IPO volume have significantly worst post IPO performances relative to IPOs that come to the market in periods of low IPO activity indicating that managers see a window of opportunity to go public during periods when investors are willing to pay higher prices for the new issues. That finding suggests that the sentiment timing theory that Loughran and Ritter (1995) support for the US IPO is also valid for the UK IPOs. That has significant implications both for managers and investors. From the managers' point of view, that gives them an opportunity to time the IPO in periods of heavy volume since at these periods they will be able to achieve higher prices for their offers thus reducing their cost of capital. From the investors' point of view, the message is to stay clear of IPOs during period of high activity. Investing in a HOT market IPO will give them a return of 12.22% by the end of fifth year while the COLD market IPOs will offer a 5 year return of 58.48%.

Another theory for the variation in IPO volume over time emphasises the importance of information asymmetries and adverse selection costs that are associated with equity issues as a crucial factor for the timing of equity issues. According to that, managers want to see the lower possible underpricing and in doing so they opt to make the IPO in periods with low pricing uncertainty which leads to lower underpricing. These information asymmetry models suggest that IPO activity is driven by lower underpricing.

We find that managers do not "time" the IPO during periods when the average first day returns are lower. The magnitude of underpricing has no effect on the amount of capital raised from Initial public Offers making as conclude that the degree of underpricing is not the main factor that is of concern to managers in the timing of IPOs. We find a strong business cycle effect on the IPO activity in the UK. During the upturn of the business cycle, more firms make an IPO and more capital is raised from Initial Public offers.

Studies from the SEO literature find that an improvement in economic conditions not only is responsible for an increase in equity financing but it also reduces the uncertainty about the true value of issuers causing a reduction in adverse selection costs. The favourable economic conditions however do not have a negative impact on adverse selection costs associated with IPOs as the SEO literature suggests. Firms that make an IPO during expansions do not face smaller underpricing relative to the firms that make the IPO during the downturn.

CHAPTER 6: THE TIMING OF SEASONED EQUITY OFFERINGS IN THE UK

6.1. INTRODUCTION

Research in the US has shown that seasoned equity issuance activity is not constant across time. Significant variations occur in the number of firms that make a seasoned equity issue and in the amount of capital that firms raise.

Many theories have been put forward to explain the time-series varying pattern of equity issuance volume. Loughran & Ritter (1995) argue that the variations is equity issuance activity are driven by variations in investors' sentiment with more capital raised when investors are willing to pay high prices for the issues. Lucas & McDonald (1990), argue that the existence of information asymmetries between managers and outside investors gives managers the opportunity to make the issue when shares are overvalued. By doing so they minimise the cost of capital and maximise the utility of existing shareholders who lose a smaller portion of the firms' ownership to new shareholders. Loughran and Ritter (1995) also find that firms issue equity when their shares are overvalued. They document a significant underperformance of issuers relative to non-issuers suggesting that the share price of the issuer at the time of the issue is higher than its intrinsic value. When investors gradually realise that the price they paid for the issue was higher than the intrinsic value, they mark down the share price of the issuer to correct that overvaluation creating the underperformance.

Loughran & Ritter (1995) not only argue that firms that make a SEO are overvalued at the time of the issue but also that periods with high SEO volume are periods when issuers are more overvalued than periods when activity is low. They find big differences in the post announcement performance of SEO firms that make the announcement in Heavy volume periods and Low volume periods. In fact, only Heavy volume periods SEOs underperform significantly while Light volume periods SEOs do not underperform. All these results make Loughran & Ritter (1995) to conclude that variations in issue volume are driven by overvaluation exploitation.

It is not possible however to argue that issuers sell overvalued shares to new shareholders for the benefits of existing shareholders when the SEO is made with the method of a rights issue. In rights issues, the new shares are offered first to existing shareholders who have the right to buy the shares or sell their rights to the market. In rights issues, it does not matter what the price of the issue is because the existing shareholders will have the same portion of the firm after the issue and their wealth will not be affected (see endnote 1 for a numerical illustration of that). The timing of a rights issue in periods when investors are overpaying will not benefit existing shareholders. The only party that stands to benefit from such a timing are the managers.

Under the agency costs theory managers might be exploiting overvaluation not for the benefits of their shareholder but for their own. An overpriced issue can raise more money and therefore more funds will be at the disposal of managers. If their remuneration or their personal satisfaction increases with the size of the firm they manage then managers will be tempted to make the issue in periods when investors are willing to pay higher prices. Overall however, the scope for managers to exploit investors by issuing during periods when shares are overvalued is limited when the SEO is made with the method of rights issues.

In this chapter we test whether rights issue activity is driven by overvaluation exploitation. We use four different ways to calculate the post-announcement performance of firms that made a rights issue in order to find whether post-SEO performance is affected by the volume of SEO activity. If managers deliberately time the issue during periods when their shares are overvalued then firms that issue during periods of heavy activity must have the most overvalued issues and the worst post-SEO performances. On the other hand during periods of low activity, shares should not be overvalued and issuers must have better post-SEO performances.

Overvaluation exploitation is not the only driving force that has been proposed for the time series variation in SEO volume. Other studies link the timing of the equity issue with the magnitude of the adverse selection costs associated with the SEO announcements. Numerous studies have shown that the announcement of a Seasoned equity offering is accompanied by a significant drop on the share price of the issuer, a drop which is around 3%. Such a large drop reduces the market value of the issuer and in some cases the loss of the market value can wipe out a large portion of the proceeds from the issue creating an indirect cost for the issuer. It is for the benefit of the firm to have the smaller price drop on the announcement of the issue but that does not automatically mean that the magnitude of the adverse selection costs is of paramount importance to issuers. Choe, Masulis and Nanda (1993) report that when SEO volume is high, announcement period returns are less negative. Bayless & Chaplinsky (1996) also find that the magnitude of adverse selection costs is important in the timing of SEO with more capital raised during periods when the announcement period returns are low. Therefore, there are evidence that managers care about the magnitude of the drop on the announcement of the issue. Periods when the price drop is smaller should attract the attention of more issuers, ceteris paribus. No study has provided international evidence on that issue. This chapter investigates the effect that adverse selection costs have on the timing of the rights issues. If managers really do care about the magnitude of these costs they will raise more capital in periods when the market reacts less adversely to the announcement of the rights issue.

Managers, who pursue the interests of existing shareholders, in order to minimise the cost of capital can exploit inside information about the true value of the firm and make the issue when the share price is overvalued. Investors are aware of managers' incentives to make an issue when shares are overvalued and on the announcement of the issue they mark down the price of the issuer. During periods when investors' concerns that managers may exploit overvaluation ease, the average price reaction should be less negative. Choe, Masulis and Nanda (1993) argue that issuers face less negative announcement period returns when they announce the equity offer during an expansion and these smaller adverse selection costs account for the increase in equity financing they document during the upturn of the business cycle. The reason behind that difference in the announcement period return across upturns and downturns of the business cycle according to Choe Masulis and Nanda (1993),is that firms have more prominent investment opportunities during the upturn and therefore an equity issue should create less concerns to investors that the issue will convey negative information for the current value of assets.

The rights issue however as we described earlier is unique because it eliminates managers' incentive to exploit overvaluation for the benefit of existing shareholders and so the market should not react negatively on the announcement of a rights issue due to overvaluation timing concerns. Nevertheless, studies on rights issues document a significant price drop on the announcement period. The negative price response on the announcement of rights issue can not in theory be explained by investors' fears that managers exploit overvaluation in pursue of the interests of their shareholders.

The proposed explanations for this significant price drop on the announcement SEO are many more and rely not only on overvaluation exploitation. The price pressure hypothesis argues that the drop is caused by the increase in the supply of shares and since the demand for the shares is assumed to stays the same, the price should drop. According to the debt coinsurance theory, an equity issue reduces the bankruptcy risk and therefore increases the value of the bondholders. Since the shareholders claims on the firm's assets are the residual of what is left after the debtholders claims are satisfied, an increase in debtholders' wealth should represent a decrease in shareholders' wealth. Hence the price drop on the announcement of the issue. The agency costs theory assumes that managers will use the proceeds of the issue to fund negative net present value projects and will engage in asset substitution that will increase their own utility and remuneration package but will damage shareholders value. Miller and Rock's (1985) model proves that changes in debt to equity ratio sends signals about the future profitability of the issuer. An equity issue reduces the leverage and sends signals of similar changes in the future earnings. (For a thorough analysis of all the theories see section 2.3.)

During the upturn of the business cycle there are more positive NPV projects and the NPV of projects is likely to be higher and so a rights issue should create less concerns that managers will undertake negative NPV projects. During the downturn of the cycle on the other hand, the investment opportunities are few, and there are more negative NPV projects increasing the likelihood that managers may undertake projects that decrease the firm's value. It is also the case that during the upturn of the cycle earnings increase and so an equity issue should also be less likely to be motivated due to managers foreseeing a deterioration in earnings. Furthermore, the bankruptcy risk is higher during the downturn of the cycle when the business environment is gloomy. During the upturn on the other hand, the bankruptcy risk that debtholders face is smaller and so the equity issue will result to a smaller transfer of wealth from shareholders to bondholders causing a less negative price reaction. During the downturn, debtholders gain more from equity issues and so the price drop should be more negative if the debt co-insurance theory can explain the drop on the share price of the issuer. So, after all, there is a theoretical rational for rights issues to have less negative price reaction during the upturn of the cycle. We investigate in this chapter the relationship between economic conditions and the adverse selection costs. If investors' concerns about the true value of the share price of the issuer and the level of future earnings are smaller during the upturn or the transfer of wealth from shareholders to debtholders is smaller during the upturn of the business cycle then the improvement in business conditions should reduce the adverse selection costs. In order however to differentiate between the 3 theories that could account for such a difference between upturns and downturns, we look at whether these overvaluation exploitation, the debt-coinsurance and the timing prior to earnings deterioration theories can explain the significant negative reaction on the announcement of the rights issue.

By using a data set never used before, the Rights Issue activity in the UK from 1975 to 1996, we are able to test the competing theories about the variability in Seasoned Equity offering activity. The first objectives of this chapter is to investigate the effect of the adverse selection costs, associated with the announcement of a rights issue, on the rights issues volume. The second objective is to see whether overvaluation exploitation is a major driving force in the variability of SEO volume in the UK. The last objective of this thesis is to see the effect of business cycle on the magnitude of adverse selection costs.

This chapter extends the Seasoned equity offerings literature by documenting the differences in the announcement period returns of rights issues in the UK across the business cycle and the relation between adverse selection costs and the volume of seasoned equity offerings in the UK. The final contribution of this chapter is that it investigates the relation between the intensity of SEO volume in the UK and the long run performance of issuers. The use of industry/ market to book value and industry/market value adjusted post announcement performances adds to the validity of our conclusions.

Our findings suggest that:

1. Rights issue activity in the UK is weakly affected by economic conditions. More firms announce a rights issue during the upturn of the business cycle especially in the second half of the expansion but the difference between upturns and downturns is marginally significant. The median number of rights issues per month and the amount of capital raised per month does not differ between upturns and downturns.
2. During the expansion phase of the business cycle, firms face lower adverse selection costs relative to the downturn of the cycle and the magnitude of adverse selection costs has a significant effect on the rights issue activity. Periods when the adverse selection costs of the previous quarter are low, are periods when more firms announce a rights issue and more capital is raised.
3. SEO volume in the UK is not driven by overvaluation exploitation. Although we find that issuers underperform after the issue there is no significant difference in the Post-SEO performance between the SEOs that made the issue in Heavy or Light volume periods. Both group of issuers exhibit similar performances showing that periods of heavy volume are not periods when the issuers can achieve more overvalued prices.

In general, our evidence support the theory that more firms announce a rights issue during periods when adverse selection costs are lower but not during periods when they can achieve prices which are above their fundamental value.

The structure of this chapter is as following. Next we present our findings about the rights issue activity in the UK across time, followed by an analysis of the effect of business cycle on rights issue volume and on the adverse selection costs. After that, the relation between adverse selection costs and the volume of rights issues is investigated. In the last part, we look at the post-announcement performance of rights issuers and especially the differences in the performances across heavy and light volume periods.

6.2. RIGHTS ISSUE ACTIVITY IN THE UK

Rights issue activity in the UK is not constant across time. In table 6.1 we report the number of rights issues of common equity per year that. In total 2991 rights issues announcements were made in the period from 1975 to 1996, according to DATASTREAM ™. In figure 6.1 we can see that the number of rights issue announcements per month varies across time. Table 6.1 reports the annual distribution of the rights issue activity. On average 136 rights issues are announced per year. There are periods however when the activity soars. 260 rights issues were announced in 1987 while in 1982 we had only 75 issues. From all the companies in the datastream population, we were able to calculate the abnormal announcement period returns for 1569 firms[8].

The amount of capital raised from rights issues also varies across time. In figure 6.2 we have plotted the monthly amount of capital raised from rights issues. The most active year was 1993 with £7.8 billion raised.

Significant time series variations occur in the average announcement period returns as well as the last column of table 6.1 indicates. There are year when the average announcement period abnormal returns are positive and significant, such as 1975 with an average return of +1.14%, and years when the average return is negative and highly significant. 1990 and 1991 were the years with the most negative returns with -4.88% and -5.11% respectively.

[8] Unavailability of Datastream mnemonics, no share price data on the announcement of the issue, no data in the pre-announcement period to enable us to calculate the abnormal announcement period returns according to the market model and the simultaneous announcement of a takeover bid were the reasons for the exclusions of rights issues from the sample.

TABLE 6.1: ANNUAL VOLUME OF RIGHTS ISSUES AND AVERAGE ABNORMAL ANNOUNCEMENT PERIOD ABNORMAL RETURNS (1975-1996)

YEAR	NUMBER OF RIGHTS ISSUES (datastream population)	NUMBER OF RIGHTS ISSUES (Our sample)	AMOUNT OF PROCEEDS (datastream population) (Real terms, prices Dec 1996 in £m	AVERAGE ANNOUNCEMENT PERIOD ABNORMAL RETURNS [9] (days -1 to +1)
1975	162	72	2,386	1.14% *
1976	119	45	1,521	-3.16% *
1977	126	54	1,267	0.30%
1978	80	35	807	0.03%
1979	95	43	3,349	-0.12%
1980	95	36	1,281	-3.79% *
1981	108	51	1,995	-2.60% *
1982	75	35	1,021	-2.18% **
1983	132	52	2,093	-1.51%
1984	112	53	1,371	0.027%
1985	135	71	3,036	-0.89%
1986	184	89	4,678	-2.94% *
1987	260	85	6,325	-1.30% *
1988	174	83	4,612	-1.31% ***
1989	177	72	2,974	-2.18% *
1990	149	74	3,108	-4.88% *
1991	186	112	6,655	-5.11% *
1992	95	54	2,228	-3.44% *
1993	188	140	7,809	-0.43%
1994	151	126	5,115	-2.98% *
1995	83	82	2,867	-1.28%
1996	105	105	3,253	0.17%

*,**,*** *denotes significance at 1% ,5%and 10% one tail, respectively*

Numerous studies have documented that the announcement of a seasoned equity offering is accompanied by a significant drop on the share price of the issuer. In table 6.2 we present the average abnormal announcement day returns from day -2 to day +2 ,where day 0 is the day of the announcement of the rights issue, and the cumulative abnormal period returns for the periods "-1 to +1" and "0 to +1".

[9] the average announcement period abnormal returns are calculated according to the market model. For more details see section 4.2

TABLE 6.2: ABNORMAL ANNOUNCEMENT PERIOD RETURNS AROUND A RIGHTS ISSUE ANNOUNCEMENT

DAY	-2	-1	0	1	2	*-1 to +1*	*0 to +1*
AVERAGE EQUALLY WEIGHTED (TEST STATISTIC OF DIFFERENCE FROM ZERO)	0.087% *1.31*	-0.104% *-1.62****	-1.423% *-7.69**	-0.268% *-1.92***	0.143% *1.45*	***-1.79%*** ***-7.36****	***-1.69%*** ***-7.21****
MEDIAN RETURN	-0.078%	-0.098%	-0.99%	-0.076%	-0.063%	***-1.16%*** ***-6.5****	***-1.06%*** ***-5.7****
AVERAGE MARKET VALUE WEIGHTED IN REAL TERMS	-0.272%	-0.464%	-2.317%	-0.310%	-0.186%	***-3.09%*** ***-6.92****	***-2.62%*** ***-6.28****
PERCENTAGE OF FIRMS WITH POSITIVE RETURNS	42%	41%	34%	46%	44%	***36.3%***	***35.9%***
PERCENTAGE OF FIRMS WITH NEGATIVE RETURNS	58%	59%	66%	54%	56%	***63.7%***	***64.1%***

Abnormal announcement day returns of asset i at day t $AR_{(i,t)}$ are calculated according to the market model where the abnormal returns are the difference between the actual returns of asset i at day t and its expected return. $AR_{(i,t)} = R_{i,t} - E(R_{i,t})$ and the expected return is calculated according to the market model, $E(R_{i,t}) = \alpha_i + \beta_i R_{m,it}$
The α and β are estimated from cross-sectional regression of the return on asset i against the return of the market (FT ALL SHARE PRICE INDEX) from an estimation period of -260 trading days to -40 trading days before the event day.

Average Abnormal Returns (AARt) for each day ,t, from -2 to day +2 are calculated as $AAR_t = \frac{1}{n}\sum_{i=1}^{n} AR_t$ where n is the number of firms

,,*** denotes significance at 1%,, 5%,, 10% respectively*

We find a negative and significant price reaction on the announcement of the rights issue. The share price of the issuer drops by an average of 1.42% at day 0 with a t-statistic of -7.69 (significant at 1%). The median return is -0.99% and the market value weighted return at day 0 is -2.331%. 66% of all firms have negative returns at day 0. Negative and significant returns are found also for days -1 and +1. In the event window -1 to +1, cumulative abnormal returns are negative, -1.796% with a test statistic of -7.36. Only 36% of all rights issue announcement had positive returns in the event window "-1 to +1" with the remaining 64% having negative returns. Value weighted announcement returns were more negative (-3.09%) than the equal weighted returns but with similar test statistics (-6.92) while median cumulative returns were also negative and significant, -1.16%.

Our evidence are similar with the findings of US studies which all document a significant negative reaction on the announcement of the SEO. Even previous UK studies find a negative and significant reaction on the announcement of UK rights issues. Levis (1995) finds that the announcement of rights issues in the UK causes the share price of the issuer to drop by 1.33% which is significantly different from zero. Shah (1995) investigates 369 UK rights issues in the period 1981 to 1988 and finds that the average announcement period return is -1.63% with 67% of all issues having negative returns.

In table 6.3 we report the three-day cumulative abnormal announcement period returns partitioned by the use of the proceeds. As with other studies, we find big differences in the impact the SEO announcement has on the share price of the issues according to the reason for the issue. Rights Issues made to fund investments have the least negative returns (-0.99%). Rights issues made to reduce debt and finance expansion and issues made to aide the restructuring of the company have the more negative returns with -7.7% and -6.4% respectively. Rights issues to fund an acquisition had an average return of -1.69% significantly different from zero with a test statistic of -3.69 and issues made to repay debt had an average return of -4.83%. Due to the big size of the sample and its time span, for almost half of the sample either no data on the use of the proceeds are available or DATASTREAM ™ gave no reason for the issue[10]

TABLE 6.3: AVERAGE ABNORMAL ANNOUNCEMENT PERIOD RETURNS PARTITIONED BY THE USE OF THE PROCEEDS OF THE ISSUE

Use of the Proceeds	NUMBER OF RIGHTS ISSUES	ANNOUNCEMENT PERIOD RETURNS (days -1 to +1)	T-STATISTICS OF DIFFERENCE FROM ZERO
INVESTMENTS	146	-0.99%	-0.65
ACQUISITIONS	334	-1.69%	-3.69
REPAY DEBT	175	-4.83%	-5.45
CAPITAL	34	-3.5%	-2.37
ACQUISITIONS & DEBT REDUCTION	15	-5.2%	-1.87
STRENGTHEN BALANCE SHEET	13	-5.9%	-1.99
RESTRUCTURING	21	-6.4%	-3.12
REDUCTION OF DEBT & EXPANSION	16	-7.7%	-1.62

[10] Datastream starts giving reasons for the issue at 1986 and stops at 1995

The reasons for such a significant negative price reaction on the announcement of a SEO has been puzzling academia for a long time. A number of explanations for that drop have been proposed. One theory argues that the price of the issuer drops because the equity issue increase the supply of shares and according to the supply and demand law, since the demand stays the same, the price drops. According to the price pressure theory as it is called, larger issues in terms of the size of the company will increase the supply of shares by a larger percentages and therefore the drop on the share price will be higher. Furthermore, the price pressure theory does not explain why the price reaction differs according to the use of the proceeds. An issue made by a company to fund an acquisition should cause a similar drop with an issue of similar size that is made to reduced debt. We find that the issues that were used to fund investments or acquisitions have relative sizes (amount of proceeds over market value of issuer at the time of the issue) similar with the relative sizes of the issues that were used to repay debt. Both issues increase the supply of shares by the same amount and according to the price pressure theory they should cause the same drop. The findings here and in other studies however suggest differently.

Another theory argues that the negative return is caused by the reduction in the debtholders risk that results from the increase in the equity capital from the issue. The debtholders have priority over shareholders over the firms' assets in the case of a bankruptcy. Shareholders only get what is left after all the debtholders get paid. The bankruptcy risk is reduced after an equity issue because the debtholders have more equity from which they can satisfy their claims in case of a bankruptcy. Therefore, an equity issue leaves the debtholders better off. But since the shareholders claims over the company assets are the residuals over what is left from debtholders, what debtholders gain represents a loss to the shareholders. Therefore the share price of common equity drops on the announcement of a SEO. According to the debt-coinsurance theory, issues that are made to reduce the debt to equity ratio should have more negative response relative to issues that are made to fund an acquisition or future growth. In the first case, the debt to equity ratio will be reduced not only because the denominator will increase but also because the nominator will decrease.

In the case of funding a future investment the issue will reduce the debt to equity only because the denominator will increase[11]. Therefore issues that are used to repay debt will have worst announcement period returns relative to issues that are used to fund expansion which is what the findings suggest. As with the price pressure theory however, large issues cause larger reductions in the debtholders' risk and therefore should be accompanied by larger price drops. Asquith and Mullins(1986) is the only study which documents that the ratio of amount of proceeds over market value of common equity is negatively and significantly related with the announcement returns. According to Asquith and Mullins(1986), large issues cause a larger drop on the announcement. Dennis (1994) finds that a negative but insignificant relation between the relative size of the issue (number of new shares over number of shares prior to the issue) and the announcement period returns. Jung et all (1996) find a positive but insignificant relation between the ratio of the amount of proceeds over total market value of common stock. The literature evidence on that debt-coinsurance theory are mixed and rather unconvincing. We are able to test the validity of this theory using our data later on in this chapter.

The most widespread theory that can explain the negative price reaction on the announcement of the issue is the one that is based on information asymmetries and managers' incentives to exploit the superior information they have over the true value of the firm relative to outside investors. Managers can estimate with greater accuracy relative to outside investors whether the current price of the share is higher than its intrinsic value. Under the assumption that managers seek to maximise their shareholders' utility and that the new shares will be purchased by new shareholders, the firm will be better off to make an issue when the share price is overvalued. More money can be raised in such situations with a smaller portion of the firm's ownership lost to new shareholders. Outside investors are aware of managers incentives and perceive an equity issue as an attempt to exploit overvaluation hence, they mark down the share price of the issuer. According to the information asymmetry models, when there is less information asymmetry or when there are less concerns that the issuer exploits overvaluation the drop on the announcement should be smaller or

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[11] Suppose that we have a company with 1m debt and 5m equity and makes an issue of 0.5m. If the issue is used to fund investment the debt to equity ratio after the issue will be 1m/5.5m =18%. If the

even a positive return should occur. Evidence of other studies indicate that issuers with high growth opportunities, which indicates that managers' incentives behind the issue are not to exploit overvaluation but to fund their growth opportunities, have less negative price reactions and the issues with large price run-ups to the announcement of the issue, which are more likely to be overvalued than firms with smaller price run-ups, have more negative announcement period returns.

As we saw earlier in the introduction however, in the case of a rights issue managers incentives to exploit overvaluation in pursue of the interests of existing shareholder diminish and overvaluation exploitation can be a valid explanation for the drop on the announcement only if managers pursue the satisfaction of their own utility and not theirs shareholders. The agency costs theory argues that managers do not pursue their shareholders' interests but their own and they can use the proceeds of the issue to fund negative net present value projects that damage shareholders' value. Therefore the market reacts negatively because of the probability that managers may undertake such actions.

Information asymmetries between managers and investors do not exist only about the true value of assets. Miller and Rock (1985) argue that managers that expect a decrease in earnings will be better off to make an equity issue before the decrease in earnings is revealed to the market. The negative price reaction is justified by investors who regard an equity issue as a signal that the future profitability of the firm is in danger. Brous (1992) finds that financial analysts regard an equity issue as a turning point in the profitability of the firm. On the month of the announcement of the issue, analysts revise downwards their forecasted earnings per share, a trend that continues for many month after the issue.

Overall, many theories can explain the negative price reaction on the announcement of a Seasoned equity offer. Later on in this chapter we regress the announcement period returns against various firm specific characteristics that will enable us to distinguish between the theories. Prior to that, we investigate the effect of the business cycle on the rights issue activity.

issue is used to repay the debt the new debt to equity ratio will be 0.5m/5.5m =9.9%

6.3. Rights issue activity across the business cycle.

In chapter 5 we found that the economic conditions have a significant impact on the Initial Public Offerings activity. More firms make an IPO and more capital is raised when the economy is in the phase of the expansion. Choe, Masulis and Nanda (1993) also report that more capital is raised from SEOs in the US during the upturns of the business cycle. Hickman (1953), Moore (1980), and more recently Berkovich & Narayánan (1993) also document that the number of firms that issue common stock increases when the economy is in the phase of an expansion.

In table 6.4 we give the mean and median number of rights issues announcements per month across the business cycle. The number of rights issues that announce a rights issue per month differs between upturns and downturns of the business cycle, 11.61 issues in upturns relative to 10.62 issues in downturns. The difference has a test statistic of 1.42 which is marginally significant only at 10% one tail tests. The median number of rights issues however in an expansion does not differ from the median number of firms that announce a rights issue during a recession. (10 companies both in upturns and downturn).

TABLE 6.4: MONTHLY RIGHTS ISSUE ACTIVITY ACROSS UPTURNS AND DOWNTURNS OF THE BUSINESS CYCLE IN THE UK

	UPTURN OF THE BUSINESS CYCLE	DOWNTURN OF THE BUSINESS CYCLE	T STATISTIC OF DIFFERENCE BETWEEN UPTURNS AND DOWNTURNS
AVERAGE Number of Rights issues per month	11.61	10.62	*1.42*
MEDIAN Number of rights issues per month	10	10	
AVERAGE Amount of capital raised from Rights issues per month (prices Dec 1996 in £m	281	244	*1.01*
MEDIAN Amount of capital raised from Rights issues per month (prices Dec 1996 in £m)	123	161	*-0.74*

1. The upturn and Downturn of the business Cycle is determined according to the Coincident indicator

The average amount of capital raised per month is also higher during the upturn of the Business Cycle with £ 281m raised per month during the upturn of the cycle and £ 244 m during the downturn but the difference is not statistically significant with a test statistic of 1.01. In fact, using the median amount of capital raised per month we see that more capital is raised from rights issues during the downturn of the cycle when £161m is raised relative to the upturn of the cycle where the median is £123m.

If we look at the rights issue activity across the 4 business cycles that occurred in the UK economy from 1975 to 1996, we find that the period between January 1986 to April 1992 was the most active cycle with both the upturn and the downturn exhibiting large numbers of firms making a rights issues and large sums of capital raised. In the first third and fourth cycles, rights issuance activity is higher during the upturns relative to the following downturn.

TABLE 6.5: RIGHTS ISSUE ACTIVITY AND UK BUSINESS CYCLES FROM 1975 TO 1996

	Upturns of the Business Cycle	Downturns of the Business Cycle
1st cycle August1975-Feb 1981 (67 months)	August1975-June 1979 (47 months) *9.04 rights per month* *£ 167 m raised per month*	July 1979-Feb 1981 (20 months) *7.3 rights per month* *£ 85 m raised per month*
2nd cycle March 1981 - December 1985 (58 Months)	March 1981-Feb1984 (36 Months) *8.69 rights per month* *£ 137 m raised per month*	March 1984 -Dec1985 (22 months) *10.86 rights per month* *£ 202 m raised per month*
3rd cycle January 1986 -April 1992 (76 months)	Jan 1986 - Sep1988 (33 months) *17.45 rights per month* *£ 442 m raised per month*	Oct 1988-Apr 1992 (43 months) *13.69 rights per month* *£ 320 m raised per month*
4th cycle May 1992 - December 1996 (56 months)	May 1992 - Oct 1994 (30 months) *12.73 rights per month* *£ 467 m raised per month*	Nov 1994 - Dec 1996 (26 months) *7.88 rights per month* *£ 264 m raised per month*

The insignificant differences in the number of rights issues per month and the amount of capital raised between upturns and downturns result from an increase in the rights issue activity in the last phase of the recession, just before the economy enters officially the expansion phase. That can be seen in table 6.6, where we have split each upturn and downturn into three sub-periods of the same length to create 6 sections of the cycle. So, the first upturn (August 1975 to June 1979) had a duration of 47 months. We split this period into three and we have three sub- periods (upturn

1, upturn 2 and upturn 3) of 16, 15 and 16 months respectively. The results are also presented in figure 6.5.

TABLE 6.6: RIGHTS ISSUE ACTIVITY ACROSS DIFFERENT PHASES OF THE BUSINESS CYCLE IN THE UK

PHASE OF THE BUSINESS CYCLE	UPTURN 1	UPTURN 2	UPTURN 3	DOWNTURN 1	DOWNTURN 2	DOWNTURN 3
AVERAGE Number of Rights issues per month	10.70	12.94	11.46	10.03	9.63	11.92
MEDIAN Number of Rights issues per month	10	10.5	10.5	9.5	8	11
AVERAGE Amount of capital raised from Rights issues per month (prices Dec 1996 in £m	253	303	290	182	235	315
MEDIAN Amount of capital raised from Rights issues per month (prices Dec 1996 in £m	143	150	109	128	163	215

We can see more graphically at figure 6.5 that the number of rights issues per month follow a pattern similar to the business cycle. As the economy enters the phase of an expansion, the rights issue activity is 10.70 issues per month. As economic conditions improve further , activity increases to 12.94 issues per month in the middle of the expansion and to 11.46 issues per month in the period before the peak. Activity drops after the peak of the cycle to 10.03 issues per month. As the economy moves deep into a recession, activity drops further to 9.63 issues per month and starts going up at the last phase of the recession just before the trough to 11.92 issues per month.

The amount of capital raised from rights issues also exhibits a pattern similar to the variation of the number of rights issues per month across different phases of the business cycle (figure 6.6) . £253 million are raised per month in the first part of the upturn, £303 million in the middle and £290 m in the last part of the upturn. Volume drops to £ 182 million per month at the first part of the recession and increases to £235m in the middle of the recession . Rights issue activity in terms of capital raised per month, reaches the peak at the last phase of the recession when £ 315 million is raised per month. That may be explained by the fact that during the last months of the recession it is usually the case that the end of the recession is "visible". Firms may be preparing for the "imminent" improvement of the economic conditions and those firms that want to "grab" the early opportunities for expansion of their business may be persuaded to make the issue announcement in those days even though the economy is still officially in a recession.

The results above provide weak evidence that there is a positive relation between economic conditions and the intensity of rights issue activity. Of course such a relation should not be something extraordinary. During the expansion phase of the business cycle firms face increased demand for their products. More investment opportunities appear and the Net Present Value of the projects is likely to be higher during that time relative to periods when the demand is low, therefore inducing firms to invest more heavily. The issue of capital is an option that managers should consider. The fact that firms face better investment opportunities during the upturn of the cycle however also means that these firms should find it easier to acquire credit to fund such projects. An improvement in economic conditions should not automatically lead firms to announce a rights issue just because demand increases. Other factors may well affect the equity issue decision.

6.4. ADVERSE SELECTION COSTS AND THE BUSINESS CYCLE.

As we have seen in the introduction of this chapter, Choe, Masulis and Nanda (1993) argue that the cause of the increase in equity financing during the upturn of the business cycle is that issuers of common stock face lower adverse selection costs when they announce the equity issue during an expansion. No study has been done in the UK to see whether the adverse selection costs associated with the announcement of a rights issue in the UK are lower during the upturn of the business cycle. Therefore, before we test if the magnitude of adverse selection costs have an effect on the timing of rights issue we have to investigate whether the announcement period returns are less negative during the upturn of the cycle as Choe, Masulis and Nanda (1993) argue.

The null and alternative hypothesis are as follows:

H_0: The announcement period abnormal returns of a rights issue announcement that is made during the upturn of the business cycle are the same as with the announcement period abnormal returns of a rights issue announcement that is made during the downturn of the business cycle.

He: The announcement period abnormal returns of a rights issue announcement that is made during the upturn of the business cycle are significantly higher than the announcement period abnormal returns of a rights issue announcement that is made during the downturn of the business cycle.

To support the story that periods of the upturn of the business cycle are associated with higher announcement period returns we have to reject the null hypothesis in favour of the alternative one. To do so, we compare the mean and median announcement periods abnormal returns of rights issues announcements across the upturn and downturn of the business cycle. If they are significantly higher during the upturn then we can argue that adverse selection costs are lower when business conditions are good.

In table 6.7 we present the cumulative three-day abnormal announcement period returns across periods with different economic conditions. Abnormal announcement period returns are higher, even though still negative, during the upturn of the business cycle relative to the downturn of the cycle. Average three-day cumulative abnormal returns are -1.53% during the upturn of the cycle. When the economy is in a recession, average announcement period returns drop to an average of -2.47%. Both were significantly different from zero with test statistics higher than 5. Median returns were -1.48% and -1.88% for the two periods respectively and were also significantly different from zero. The difference in the average announcement period returns between the upturns and downturns was statistically significant at 5% one tail tests with a T-statistic of 1.84. The difference in the medians however was not significant with a test statistic of 0.77.

TABLE 6.7: ABNORMAL ANNOUNCEMENT PERIOD RETURNS OF RIGHTS ISSUES ACROSS UPTURNS AND DOWNTURNS OF THE BUSINESS CYCLE

	UPTURN OF THE BUSINESS CYCLE	**DOWNTURN** OF THE BUSINESS CYCLE	TEST STATISTIC OF DIFFERENCE BETWEEN UPTURNS AND DOWNTURNS
Average Abnormal Announcement returns, Period -1 to+1. (number of observations)	-1.53% (862 firms)	-2.47% (660) [1]	*1.84*
Test statistic of difference of average from zero	-5.54	-5.79	
Median Abnormal Announcement returns(Period -1 to +1)	-1.48%	-1.88%	*0.77*
Test statistic of difference of medians from zero	-5.38	-4.42	
Percentage of positive returns	36%	35%	
Percentage of negative returns	64%	65%	

1. *the number of observations in upturns and downturns is smaller than the total number of issues in our sample of 1570 because the first cycle starts at August 1975 while the whole sample starts from January 1975*

In table 6.8 we see how the abnormal announcement period returns behave across the whole duration of the cycle. The results are also plotted in figure 6.5 (solid red line). Announcement period returns are negative through all 6 phases of the cycle. At the beginning of the upturn the average return is -2.10% and increases to -0.87% in the middle part of the expansion and becomes -1.64% in the last part of the upturn. After the economy enters the recession, the average announcement period return drops further to -1.86% in the first and -3.04% in the middle part of the recession. In the period before the trough the average return is -2.50%.

Median returns per month also exhibit a similar pattern with months in the early part of the expansion having a median return of -2.02% and the middle part a median return of -1.09%.At the last part of the expansion the median return per month is -1.42% and it deeps to a low of -2.81% in the first part of the recession. In the last two phases of the recession median returns per month are -1.55% and -1.42% respectively.

TABLE 6.8: ABNORMAL ANNOUNCEMENT PERIOD RETURNS ACROSS DIFFERENT PHASES OF THE BUSINESS CYCLE

PHASE OF THE BUSINESS CYCLE	UPTURN 1	UPTURN 2	UPTURN 3	DOWNTURN 1	DOWNTURN 2	DOWNTURN 3
Average Abnormal Announcement returns, Period -1 to+1.(number of observations)	-2.10% (278)	-0.87% (287)	-1.64% (297)	-1.86% (196)	-3.04% (190)	-2.50% (274)
Test statistic of difference of average from zero	*-4.1*	*-2.1*	*-3.18*	*-2.58*	*-2.45*	*-4.11*
Percentage of positive returns	*33%*	*40%*	*36%*	*27%*	*39%*	*38%*
Percentage of negative returns	*67%*	*60%*	*64%*	*73%*	*61%*	*62%*
Median Abnormal Announcement returns, per month (Period -1 to+1)	-2.02%	-1.09%	-1.42%	-2.81%	-1.55%	-1.42%
Test statistic of difference of medians from zero	*-4.05*	*-2.63*	*-2.75*	*-3.9*	*-1.4*	*-2.32*

These descriptive statistics seem to prove that adverse selection costs are lower in periods when economic condition are good. Average announcement period returns are higher during the upturn while medians announcement period returns during upturns are higher than downturns but insignificantly so. It may be the case however that the different response to the announcement of a rights issue during good economic conditions may arise from the fact that firms that make an issue during these periods have different characteristics from firms that make an issue in other periods. More noticeably, it could be the case that announcement day returns are higher during the expansions because we have more rights issues to fund an acquisition or an investment in these periods which , as we have shown in table 6.3 are associated with less negative announcement day returns. In the same way, more negative announcement day returns in recessions could result from more rights issues used to reduce debt in these periods which are associated with more negative returns.

In Panel A of table 6.9 we present the number of rights issues partitioned by their reason of the issue across upturns and downturns of the business cycle and the percentage of each group relative to all the number of rights issues that information about the use of the proceeds has been found. There are no significant differences between the upturns and the downturns of the cycle. 42.81% of all firms that announced a rights issue during an expansion did so to fund an acquisition while 45.36% of all rights issues announced in the downturn were used to fund an acquisition. The percentage of firms that used the issue proceeds to repay debt was 22.5% in the upturn of the cycle and 23.9% in the downturn of the cycle.

Overall, the higher returns across upturns of the cycle are not driven by more rights issues announced to fund investments or acquisitions during the upturn or more firms announcing a rights issue to repay debt in the downturn. Indeed as panel B of table 6.9 shows, rights issues that were used to finance acquisitions had higher returns when the announcements were made during the expansion. The issues that were used to fund an acquisition during the upturn have an average announcement return of -0.70% while the issues that were used to fund an acquisition during the downturn have an average return of -2.58% significantly more negative than the upturn. Even in the cases when the issue proceeds were used to repay debt we find that the issue announcements made during the downturn have significantly more negative (-6.58%) relative to the upturn (-2.88%).

TABLE 6.9: NUMBER OF FIRMS THAT ANNOUNCED A RIGHTS ISSUE ACROSS UPTURNS AND DOWNTURNS OF THE BUSINESS CYCLE PARTITIONED BY THE USE OF THE PROCEEDS

PANEL A

	UPTURN	DOWNTURN
INVESTMENTS	65 (17.61%)	81 (20.87%)
ACQUISITIONS	158 (42.81%)	176 (45.36%)
REPAY DEBT	82 (22.49)	93 (23.96%)

in parentheses we have the percentage of each category over all the issues that we found the use of the proceeds

PANEL B

	RETURNS DURING UPTURNS	RETURNS DURING DOWNTURNS	t stats of difference between upturn and downturn
	ISSUE MADE TO FUND ACQUISITIONS		
AVERAGE Announcement period return	-0.70%	-2.58%	2.29
MEDIAN Announcement period return	-0.65%	-2.29%	2.01
	ISSUE MADE TO FUND EXPANSION		
AVERAGE Announcement period return	-0.48%	-1.41%	0.57
MEDIAN Announcement period return	-1.63%	-3.33%	1.04
	ISSUE MADE TO REDUCE DEBT		
AVERAGE Announcement period return	-2.88%	-6.58%	2.36
MEDIAN Announcement period return	-3.04%	-4.07%	0.65

The results in panel B provide strong support that periods of good economic conditions are periods with lower adverse selection costs irrespective of the use of the proceeds from the issue.

The price reaction on the announcement of a Seasoned Equity Offer has been found to differ according to the growth opportunities of the issuer. Firms that have better growth opportunities suffer a less negative price reaction on the announcement of the issue. So, the difference in the announcement day returns that we observe across upturns and downturns could be driven by differences in the growth potentials of the issuers. Firms that make an issue during the upturn could be characterised by better growth opportunities

In table 6.10 we present various firm specific characteristics of issuers across the business cycle. It turns out that during upturns the average issuer has a slightly larger market value than the average issuer during downturns (£241.3m and £231.8m respectively) but they issue smaller amounts of capital in absolute values (£50.01m and £55.5m respectively) (All figures are in real terms). Firms that issue during an expansion have lower market to book values (2.10 relative to 2.75 , difference which is significant at 5%) and lower Q ratios (1.97 and 2.10 respectively). Overall, it seems that the differences in adverse selection costs between upturns and downturns are not driven by firm specific characteristics. Measures of growth opportunities such as the market to book value and the Q ratio are not higher in expansions.

TABLE 6.10: AVERAGE RIGHTS ISSUERS' CHARACTERISTICS ACROSS UPTURNS AND DOWNTURNS OF THE BUSINESS CYCLE

	UPTURN OF THE BUSINESS CYCLE	DOWNTURN OF THE BUSINESS CYCLE
MARKET TO BOOK VALUE	2.10	2.75
QRATIO	1.97	2.10
PROCEEDS OVER MARKET VALUE	20.7%	23.8%
AVERAGE AMOUNT OF CAPITAL RAISED IN REAL TERMS per issue (£m)	50.019	55.520
AVERAGE MARKET VALUE OF ISSUER IN REAL TERMS (£000)	241.303	231.831

1 All the variables are measured at 5 days prior to the announcement of the issue. The q ratio is calculated as the market value of common equity plus the book value of preferable equity and debt over the book value of equity (common and preferable) and debt.

The less negative price response on the announcement of a rights issue during the expansion phase of the business cycle or in the peak of the cycle seems that it can not be explained by differences in firms' growth opportunities. Choe, Masulis and Nanda (1993) argue that these periods offer a unique advantage. During these periods firms experience lower adverse selection costs irrespective to the characteristics of the issuer such as growth potentials. In order to test this hypothesis we run regressions where the dependent variable is the three-day cumulative abnormal announcement returns and as independent variable we use various firm specific characteristics, macroeconomic variables and economic indicators. In order to see if periods of good economic conditions are associated with lower adverse selection costs, after allowing for the effect of other characteristics, we use a dummy variable. The dummy takes the value of 1 if the issue announcement was made during an expansion and zero if the announcement was made during a recession. If the dummy variable has a positive and significant coefficient in all the regressions that can be interpreted as strong evidence that these periods offer a unique opportunity for the average issuer to experience a less negative price drop on the announcement of the rights issue.

In Table 6.11 we present the regressions where the dependent variable in the three day (-1 to +1) cumulative abnormal announcement day returns. The type of regressions is weighted least squares where the weights of the regressions are the inverse of the variance of the residuals as estimated from the market model. The weighted least squares has the benefit of giving higher weight to the companies whose returns can be explained by the movements in the market with higher R^2. Suppose that we have two companies. Firm A, that it's returns before the announcement exhibit a smooth pattern and move in line with the market. The regression of firm's A returns with the returns of the market will have a high R^2 and therefore the variance of the residuals will be low. Firm B that the price movements before the announcement are very erratic, there is big fluctuation and the regression of firm B returns with the returns of the market will have a low R^2 and the variance of the residuals will be high. The Ordinary Least squares type of regression gives to the two firms the same weight. The weighted least squares assigns higher weight to the firm A because its returns are more predictable that the returns of firm B. Therefore a drop on the price of firm A on the announcement of the rights issue will be more unexpected than the drop on the price of firm B . Firm B exhibits a more erratic pattern relative to firm A and so a drop on the announcement may not indicate the generation of new information but may be a price movements like the many observed prior to the announcement of the issue. Firm A however is less likely to have erratic movements before the announcement and therefore a price drop on the announcement is more likely to be caused by the new information generated by the issue and not to be an random incident. The observation with the higher weight was 2.56% but the exclusion of that observation from the sample did not alter the results. The description of the independent variables is in the bottom of the table.

TABLE 6.11:REGRESSION ANALYSIS OF THE ABNORMAL ANNOUNCEMENT PERIOD RETURNS AGAINST ISSUERS CHARACHTERISTICS, MACROECONOMIC VARIABLES AND BUSINESS CYCLE INDICATORS (1975 - 1996)

	Constant	3 MONTH MARKET RUN UP	3 MONTH FIRM ABNORMAL RUNUP	MTBV	QRATIO	PROCCEDS /MARKET VALUE	PROCEEDS OVER BOOK VALUE OF EQUITY	DEBT TO EQUITY	DUMMYI (1 if month is during expansion zero otherwise)	CHANGE IN COINCIDENT INDICATOR	Growth in earnings	N	R^2
1	-0.0109 (-5.26)	-0.052 (-2.38)	0.018 (1.44)	0.00025 (2.56)		-0.00046 (-0.17)				0.435 (2.01)		1139	1.1%
2	-0.009 (-5.06)	-0.046 (-2.15)		0.00024 (2.42)		-0.0050 (-0.19)				0.4058 (2.68)		1139	1.0%
3	-0.011 (-6.28)		0.01302 (1.01)	0.00033 (3.50)		-0.00062 (-0.23)				0.562 (2.68)		1139	1.1%
4	-0.0189 (-7.73)	-0.0396 (-1.84)	0.0244 (1.91)	0.00017 (2.52)		-0.0013 (-0.51)			0.0154 (6.02)			1139	3.86)
5	-0.02 (-9.87)		0.022 (1.79)	0.00018 (2.02)			0.00053 (0.72)		0.052 (5.40)			1139	3.7%
6	-0.027 (-5.66)	0.063 (0.92)	0.659 (4.12)		-0.00044 (-0.25)				0.0074 (1.77)			748	2.3%
7	-0.027 (-5.98)		0.659 (4.16)		-0.00047 (-0.27)				0.0073 (1.75)			748	2.4%
8	-0.0189 (-4.82)	0.01415 (0.49)	0.0697 (4.54)					-0.029 (-5.87)	0.0086 (2.13)			753	7.6%
9	-0.018 (-4.84)		0.071 (4.72)					-0.029 (-5.89)	0.0084 (2.08)			753	7.6%
10	-0.022 (-5.77)		0.0706 (4.04)				0.0046 (1.02)	-0.0309 (-5.78)	0.0148 (3.50)			753	8.9%
11	-0.0009 (-0.03)		0.1019 (4.93)								-0.0094 (-2.68)	838	3.4%
12	-0.0017 (-0.48)		0.1053 (4.32)								-0.0061 (-3.89)	716	4.2%
13	0.0060 (1.84)		0.0849 (3.42)								-0.0105 (-9.35)	641	16.1%

Weighted Least Squares of the 3-day abnormal announcement day returns where the weights are the market model residuals The Cohrane-Orcutt method is used to adjust for the first order serial correlation of the errors. MARKET RUN UP is the 3 and 6 month returns of the FT All Share prior to the beginning of the month . DUMMY 1 takes the value of 1 if the month is classified as Upturn of the business cycle and 0 if the month is classified as downturn of the business cycle. DUMMY2 takes the value of 1 if the month is during the second half of the expansion and zero otherwise. 3 and 6 month firm run up are the 3 and 6 month abnormal firm returns where the abnormal returns are calculated as the return of security i at month t minus the expected return of security i at month t $AR_{i,t} = R_{i,t} - \beta R_{m,t}$ where $R_{m,t}$ is the monthly return of the FT ALL SHARE PRICE INDEX and β is calculated from the period -36 to -6 months relative to the announcement of the issue . MTBV is the market to book value of the issuer. Qratio is the ratio of the market value of equity and book value of debt and preference shares over the total value of assets. DEBT TO EQUITY is the debt to equity ratio. For all the accounting variables we allowed for 6 months lag between the end of the financial year and their publications. If an issue took place less than 6 months after the year-end date, we used the accounts of the previous year.

We find that the market return is negatively related with the announcement period returns. An increase in the FTA share price index returns in the 3 months up to the beginning of the month of the announcement causes more negative announcement returns. Masulis and Korwar (1986) find positive and significant coefficients for the market return and so does Dennis (1994) and Choe, Masulis and Nanda (1993). Bayless and Chaplinsky (1996) however find significant negative coefficients for the market return of the year prior to the issue.

We also find that the pre-announcement 3 month abnormal returns are positively related with the announcement day returns in contrast with the empirical findings of US studies on SEOs. Masulis and Korwar (1986), Choe, Masulis and Nanda (1993) find significant negative coefficients for the firm abnormal return and so does Dennis(1994). Shah (1996) however who investigates the announcement period returns for 369 rights issues in the UK in the period 1981 to 1988 also finds a positive coefficient for the abnormal 1-year and 2 year return prior to the issue. We also used longer periods such as the 6, 9 ,12 and 15 month abnormal price run-up but we find that in most of the cases the coefficients were positive and significant.

The positive relation between firm specific abnormal price run up we document here is in contrast with the story which argues that firms that make an equity issue are overvalued firms. If firms are overvalued and investors interpret an equity issue as an attempt to exploit overvaluation, then the larger the pre-announcement price run up the higher the drop on the announcement should be. Firms that have a big run-up are more likely to be overvalued relative to firms with a small run-up. So, the price reaction should be more negative for the former firms. Nevertheless, we observe that firms with high run-up have higher returns on the announcement of the issue. That means that the market does not perceive a rights issue after a big price run-up as an exploitation of overvaluation. The correlation between the abnormal announcement period returns and the 3 and 6 month firm price run up were positive, 0.137 and 0.105 respectively. These figures show that there is not a negative relation between the announcement period returns and the pre - announcement price run-up.

The market to book is considered to be a proxy for growth opportunities. Firms with high market to book are regarded as "growth stocks". One would expect to find that firms with high market to book values experience higher announcement day returns. Investors who look at proxies for growth such as market to book would consider a rights issue by a firm with high growth potential as better news than a rights issue by a firm with lower growth potentials. Denis (1994) finds a positive but insignificant relation between market to book value and the q ratio with the announcement period returns. Bayless and Chaplinsky (1996) report a significant positive coefficient for Q ratio. Our results are in line with this argument since market to book is positively related to the announcement day returns with test statistic ranging from 2.02 to 3.50. The higher the market to book value of the issuer, the smaller the price drop on the announcement of the rights issue. In contrast with the market to book value, the Q ratio, another proxy widely used for growth opportunities which is defined as the market value of equity plus the book value of debt and preference shares over the total assets, was not significant. We have to note however that due to lack of data in the regressions where we used the q ratio the size of the sample is reduced to 748 firms from 1139 where the market to book value is used.

According to the price pressure theory, an equity issue increases the supply of shares and causes a drop on the share price since the demand for the shares will be the same. Bayless and Chaplinsky (1996) find a significant negative relation between the value of the proceeds over total market value of the firm and the announcement period returns and so do Asquith and Mullins (1986). Dennis (1994) reports insignificant even though still negative coefficients. We find a negative relation between the ratio of amount of proceeds over market value of common equity but its is not significant. We also used the ratio of the amount of proceeds over book value of equity but the coefficient was also not significant. In no regression did we find that the relative size of the issue is related to the magnitude of the announcement returns.

The leverage is another variable that has been found to be able to explain the announcement day returns. In our tests, the debt to equity ratio was the variable with the higher negative relation with the announcement day abnormal returns and with very strong significance even though the size of the sample drops to 753 compared with the 1139 of the previous regressions. That result indicates that investors perceive an equity issue from firms with high levels of debt which indicates serious financial distress as a more negative signal than the issues from firms with low debt to equity ratios. A firm with a debt to equity ratio of 1 will have an approximately 1.45% larger drop on the announcement of the issue relative to a firm with a ratio of

0.5. When the debt to equity ratio is high then the bankruptcy risk is high and the reduction of the bankruptcy risk that the equity issue causes will benefiting debtholders the most. If the debt to equity ratio is low then the bankruptcy risk is low and the further reduction of this risk will be of lesser importance to the debtholders. Our finding that firms with large debt to equity ratios have more negative price reactions suggest that the debt co-insurance theory may explain the negative price reaction. Nevertheless, a larger equity issue should reduce the leverage by a higher percentage and therefore the reduction of risk for the debt should be greater. The ratio of proceeds over the market value of the firm as we saw is not significantly related with the announcement day returns. In other words larger issues which reduce the leverage by greater proportions and transfer more wealth do not induce more negative returns on the announcement of the rights issue. Therefore we can not support the story that the negative returns on the announcement of an equity issue can be explained by the transfer of wealth between equity holders to debtholders.

That coefficient for the debt to equity reveals that an equity issue by firms in financial distress is perceived as a bad signal by the market. The issuer may be expecting bad times in terms of the level of the future earnings in the near future and therefore managers may think that the current levels of debt may be too difficult to be serviced. An equity issue will reduce the debt to equity ratio and will provide funds that could be used to repay debts. In other words, the market may be reacting negatively because they believe that managers foresee a deterioration in the future earnings. The best way to see whether the market thinks that the equity issue announcement is perceived by the market as a signal that the future earnings will decrease is by looking at how analysts revise their earnings forecasts around the rights issue announcement. That issue is investigated in chapter 9.

The variable with the most significant positive coefficient is the dummy variable we use for the upturn of the business cycle periods (DUMMY1). The results show that an issuer that made the announcement during the upturn of the business cycle experienced higher returns ranging between 0.5% to 1.7% than the issue that was announced during the downturn of the cycle. The change in the coincident indicator also had positive and significant coefficients.

We believe that the coefficient of the dummy variable is the strongest evidence that the upturn of the business cycle is a period when adverse selection costs are lower. That is because the dummy remains significant even when we take into account the firm specific characteristics and macroeconomic factors that may have an effect the magnitude of adverse selection costs. The expansion phase of the business cycle is a period when the announcement of a rights issue is accompanied by lower adverse selection costs. So, we reject the null hypothesis in favour of the alternative. Periods of the upturn of the business cycle are periods when the average announcement period returns are less negative.

In the regressions 11,12 and 13 of the table 6.11 we run three additional regressions where the independent variable is the earning per share growth form the previous 1, 2 and 3 years respectively . The 1-year growth in earnings per share for example is the growth in the earnings per share between the period 5 days prior to the announcement of the issue and the previous year. We find negative and significant coefficients for the 1,2 and 3 year growth in earnings per share. What these coefficients indicate is that firms with high growth in earnings in the period prior to the announcement of the rights issue have more negative price response on the announcement of the issue. If the market was expecting that the growth in earnings to continue after the issue then there is no reason to react adversely to issuers with high growth in earnings. It seems that the market's view is that firms with a high growth in earnings can not sustain that growth.. Hence, the more negative price response to the announcement of issues by firms with high growth in earnings.

Apart from testing whether the announcement period returns are higher during the upturn of the business cycle, this section gave us useful insights on the reasons for the negative response on the announcement of the rights issue. We find evidence against the price pressure and the debt coinsurance theories since the magnitude of the drop is not related with the size of the issue as these theories predict.. We also find that investors do not regard a rights issue as an attempt to exploit overvaluation since no negative relation between the magnitude of the price drop and the price run up exists. We find that firms with good growth opportunities have less negative price reaction. The most interesting results however is the negative relation between the pre-announcement growth in earnings and the announcement period return. That provides support to the theory of Miller and Rock (1985) that equity issues signals changes in the future earnings. A more complete investigation of that theory can be made by looking at how the market views that the equity issue will affect the profitability of these firms. That can be done by looking at how financial analysts revise their earnings forecasts around the rights issue period. We will draw our attention to this issue in chapter 9 where we look at analysts forecast revisions around the announcement of a rights issue.

6.5. TIMING OF RIGHTS ISSUE ACTIVITY.

In the previous section we found evidence that adverse selection costs are significantly lower during the upturn of the business cycle. The fact that during the upturn of the cycle adverse selection costs are lower does not automatically mean that more firms time their equity issue in an expansion because in that period these costs are lower. It may be a coincidence that lower adverse selection costs are lower when activity is high and adverse selection costs may not have a direct effect on the volume of rights issue activity.

This section tries to find what is the direct effect of adverse selection costs on the timing of Rights Issue activity. For this purpose we run two groups of time series regressions where in the first the dependent variables are the number of rights issues per month and the amount of capital raised per month in real terms in the second group, against a number of macroeconomic variables. Apart from macroeconomic variables which we use as control variables, we use as independent variable the average announcement period abnormal returns of the previous quarter. If the coefficient of the announcement period abnormal returns is positive and statistically significant that will indicate that as the announcement period returns of the previous quarter increase (become less negative), and therefore adverse selection costs decrease, more firms make a rights issue and more capital is raised from rights issues at the current month. The results of the regressions are in table 6.12 (number of rights issues per month) and 6.13 (amount of capital raised per month).

The monthly distribution of the number of rights issues announcement from January 1975 until December 1996 is not normally distributed but the distribution is log-normal. Therefore, we use as dependent variable the Log of the number of rights issues announcement per month, which is normally distributed with a Jarque-Bera statistic which rejects the hypothesis of not normality at 5%. The monthly distribution of the amount of capital raised from of rights issues from January 1975 until December 1996 (in Dec 1996 prices) is also not normally distributed but the distribution is log-normal. Therefore, e use as dependent variable the Log of the amount of capital raised form rights issues per month, which is normally distributed with a Jarque-Bera statistic which rejects the hypothesis of not normality at 5%.

As independent variables we use a number of macroeconomic factors. Interest rates are represented with two variables. We use the monthly change in the 3-month treasury bills and the monthly change of the Long Term Government bonds. As interest rates increase, the cost of borrowing increases and therefore managers may look for alternative sources of finance such as common equity capital. Therefore as interest rates go up , equity issue activity should go up. So, a positive sign for interest rates coefficients is expected if the substitution effect is strong.

As a measure of the level of the stock market we use 30, 60 and 90 trading day cumulative daily compounded returns of the FT All Share Price index (MARKET RUN UP). Rising markets have been associated with an increase in Seasoned equity offers but rising market have also been associated with periods of good economic conditions so we expect to find a significant and positive relation between the rights issue activity and the market run up.

It has been cited in the literature (Choe, Masulis & Nanda 1993) that volatility adversely affect the ratio of equity offers over all the securities offered because volatile markets would indicate a greater uncertainty about the firm's value. We use 30, 60 and 180 day volatility to see if high volatility results in lower rights issue activity.

We use a number of economic indicators to see if the improvement in business conditions cause rights issue activity to increase. The indicators we use is the monthly change in the Coincident and Short leading indicator supplied by Central Statistical Office. In addition to the economic indicator, two dummy variables are used. The first dummy takes the value of 1 if the month is classified as Upturn of the business cycle and 0 if the month is classified as downturn of the business cycle.

The second dummy takes the value of 1 if the month is classified as being in the second half of the expansion phase of the business cycle and 0 otherwise. We expect to find a positive relation between the change in economic indicators and the rights issue activity. If rights issue activity is higher during the expansion then the coefficients of the two dummy variables should be positive and significant.

Last but not least, one more variable is used to test whether the magnitude of adverse selection costs have an effect on the timing of rights issue activity. This variable is the average announcement period abnormal returns of all issues that were announced during the 3-month period prior to the beginning of the current month. If adverse selection costs have an important role in the timing of equity issues we should find a positive and significant relation between the magnitude of these costs and SEO volume. The Cochrane-Orcutt method is used to correct for the first order serial correlation. T- Statistics are given below the coefficients.

The results of the regressions where the dependent variable is the log of the Number of rights issues per month are in table 6.12. Rights issue activity is positively affected by the stock market performance. An increase in the stock market return results to an increase in the rights issue activity. The higher the continuously compound FT All Share returns over the 60 trading days prior to the beginning of the month of the stock offering, the larger the number of rights issue announcements in that month. The coefficients were significant usually at 5% level or higher. Using 30 and 90 day periods instead of the 60 also produced significant positive coefficients (results not reported).

We find that changes in short-term interest rates positively affect the rights issue activity but the coefficients are insignificant. Changes in Long-term interest rates are also positively related with the rights issue activity but this time the coefficients are significant with test statistics higher than 2.40. That result suggests that as long term interest rates go up, rights issue activity increases which shows that the timing decision of an equity issue is driven by considerations about the alternative sources of finance. When long term interest rates rise, debt becomes more expensive and equity issuance activity increases significantly.

TABLE 6.12: REGRESSION ANALYSIS OF THE NUMBER OF RIGHTS ISSUES PER MONTH (1975 - 1996)

The regressions we run had the following format

Log(Number of RIGHTS) = C +Log(1+change in 3-month T bills)+ Log(1+change in Government bonds) + Log(1+Market run up) + Log(volatility) + Log(1+change in coincident indicator)+ Log(1+change in short leading indicator)+ +DUMMY 1 + DUMMY 2 + Log(1+adverse selection costs)

	Constant	(60 day cumulative FT ALL SHARE)	3 month T-Bill)	long term Gov. Bonds	(60 day volatility of FT ALL SHARE)	Change in Coincident Indicator	Change in Short Leading Indicator	DUMMY1 (1 if month is during expansion zero otherwise)	DUMMY2 (1 if month is during second half of expansion and zero otherwise)	ADSC (average abnormal announcement returns during previous term)	R^2
1	2.29 *(24.96)*	1.08 *(2.22)*			-0.37 *(-0.54)*	6.24 *(0.83)*				3.17 (2.12)	33.6%
2	2.33 *(25.19)*	0.72 *(1.47)*			-0.63 *(-0.92)*		13.90 *(2.56)*			3.43 (2.34)	35.1%
3	2.29 *(20.28)*	1.03 *(2.13)*			-0.40 *(-0.58)*			0.02 *(0.11)*		3.37 (2.28)	33.4%
4	2.25 *(22.3)*	1.06 *(2.18)*			-0.45 *(-0.66)*				0.17 *(1.34)*	3.17 (2.13)	33.8%
5	2.30 *(25.1)*	1.04 *(2.13)*	0.90 (0.92)		-0.35 *(-0.52)*	6.18 *(0.83)*				3.17 (2.12)	33.5%
6	2..33 *(25.36)*	0.70 *(1.41)*	0.79 *(0.81)*		-0.61 *(-0.89)*		13.63 *(2.52)*			3.42 (2.34)	35.0%
7	2.29 *(20.39)*	1.00 *(2.04)*	0.91 *(0.93)*		-0.38 *(-0.55)*			0.02 *(0.14)*		3.37 (2.27)	33.4%
8	2.25 *(22.36)*	1.01 *(2.06)*	0.86 *(0.88)*		-0.44 *(-0.64)*				0.13 *(1.32)*	3.18 (2.14)	33.7%
9	2.30 *(25.04)*	1.03 *(2.13)*		1.01 *(2.44)*	-0.37 *(-0.55)*	5.49 *(0.74)*				2.94 (1.98)	34.8%
10	2.33 *(25.5)*	0.68 *(1.39)*		1.09 *(2.67)*	-0.63 *(-0.94)*		14.74 *(2.75)*			3.13 (2.16)	36.2%
11	2.29 *(20.3)*	0.99 *(2.05)*		1.02 *(2.48)*	-0.40 *(-0.58)*			0.016 *(0.13)*		3.11 (2.11)	34.7%
12	2.26 *(22.3)*	1.00 *(2.06)*		0.99 *(2.42)*	-0.46 *(-0.67)*				0.16 *(1.23)*	2.95 (2.00)	34.9%

The Cohrane-Orcutt method is used to adjust for the first order serial correlation of the errors. The dependent variable is the log of the number of rights issues per month. MARKET RUN UP is the 60 day cumulative returns of the FT All Share prior to the beginning of the month .VOLATILITY is the 60 day volatility of the daily returns of the FT ALL SHARE PRICE INDEX prior to the beginning of the month. Change in the coincident and short leading indicators is the monthly change in the Coincident and Short leading indicator supplied by Central Statistical Office measured over three months prior to the month of the offer. DUMMY 1 takes the value of 1 if the month is classified as HOT (Upturn of the business cycle) and 0 if the month is classified as COLD (downturn of the business cycle). DUMMY2 takes the value of 1 if the month is during the second half of the expansion and zero otherwise .ADVERSE SELECTION COSTS is the average of the abnormal announcement day returns of the issues that were announced in the previous 3 months.

In contrast with Choe, Masulis and Nanda (1993) we find insignificant even though still negative coefficient for the volatility. 60-day volatility as measured over the 60 trading days prior to the beginning of the month had negative but insignificant coefficients in most of the regressions So, was the 30-day volatility while the 180-day volatility had positive but totally insignificant coefficients (Results with these variables not reported).

As a proxy for economic condition we use the monthly change of the coincident and short leading indicator measured over three months before the month of the announcement. The change in the coincident indicator was positively related with the rights issue activity but not significantly so. The change in the short leading indicator was positive and significant at 1% level of significance. However, the dummy that takes the value of 1 if the month is during the expansion phase of the business cycle and 0 if the month is during the recession was not significant showing that when we take into account the rising markets and interest rates, we can not argue that more firms make a rights issue announcement during the whole expansion phase of the business cycle. As the coefficient of the second dummy (DUMMY 2) that takes the value of 1 if the month is during the second phase of the expansion shows however , the rights issue activity is also not significantly higher during the second half of the expansion phase of the business cycle

The last independent variable that we use is the adverse selection costs in order to see what is their effect on the timing of rights issue activity. The variable *adverse selection costs* is the average abnormal announcement period returns of all the issues that were announced in the previous term. In all the regressions, the magnitude of adverse selection costs was statistically significant and with a positive coefficient, indicating that as the announcement day returns of the previous 3 months increase (become less negative) the rights issue activity at the current month increases. Most of the coefficients for the adverse selection costs were significant at 5% level two tail tests. The coefficients of the adverse selection costs indicate that these costs have a role to play in the timing of rights issues. More firms make a rights issue in a month when the adverse selection costs of the previous quarter are low. The R^2 of the regressions are above 30% which shows that our results are economically significant apart from statistically significant.

Table 6.13 presents the results of the regressions when the dependent variable is the log of the amount of capital raised from rights issues per month in real terms. As with the results of the regressions of the number of rights issues per month in table 6.12, rising markets lead to more equity being raised. Volatility adversely and significantly affects the amount of capital raised while interest rates are insignificant. The change in the coincident indicator was insignificant while the change in the short leading indicator was significant. The dummy variables however were not significant showing that the amount of capital raised does not differ between upturns and downturns nor between the second half of the expansion and the rest of the periods. Interest rates were also not significant.

As a last independent variable we add the adverse selection costs. As with the regressions where the dependent variable was the number of rights issues per month, we find that the magnitude of abnormal announcement day returns positively affects the amount of capital raised from rights issues. The higher the returns on the announcement of the rights issue in the previous three months were, the higher the amount of capital raised in that month. The coefficients however were marginally significant at 10% level one tail tests. The Adjusted R^2 add economic significance in the results since they are around 15% which is lower than the R^2 in the regression of the number of rights issues per month but that can be attributed to the fact that the amount of capital raised per month exhibits higher fluctuations from one month to the other thus making the attempt to model it more difficult .

TABLE 6.13: REGRESSION ANALYSIS OF THE AMOUNT OF CAPITAL RAISED (REAL TERMS) FROM RIGHTS ISSUES PER MONTH (1975 - 1996)

The regressions we run had the following format

Log(Amount of capital raised from RIGHTS) = C +Log(1+change in 3-month T bills)+ Log(1+ change in Government bonds) + Log(1+Market run up) + Log(1+volatility) + Log(1+ change in coincident indicator)+ Log(1+ change in short leading indicator)+ +DUMMY 1 + DUMMY 2 + Log(1+adverse selection costs)

	Constant	(60 day cumulative FT ALL SHARE)	3 month T-Bill)	long term Gov. Bonds	(60 day volatility of FT ALL SHARE)	Change in Coincident Indicator	Change in Short Leading Indicator	DUMMY1 (1 if month is during expansion zero otherwise)	DUMMY2 (1 if month is during second half of expansion and zero otherwise)	ADSC (average abnormal announcement returns during previous term)	R^2
1	4.91 *(32.48)*	2.54 *(2.56)*			-2.11 *(-1.85)*	12.08 *(0.90)*				3.77 (1.55)	14.2%
2	*4.97* *(33.05)*	1.87 *(1.84)*			-2.44 *(-2.13)*		19.14 *(1.92)*			4.73 (1.62)	15.2%
3	4.93 *(26.4)*	2.37 *(2.39)*			-2.16 *(-1.86)*			-0.0109 *(0.05)*		4.51 (1.52)	13.9%
4	4.97 *(29.98)*	2.32 *(2.34)*			-2.12 *(-1.84)*				0.13 *(0.62)*	3.17 (2.13)	14.1%
5	4.91 *(32.41)*	2.45 *(2.45)*	2.08 (0.95)		-2.12 *(-1.86)*	11.77 *(0.87)*				3.76 (1.54)	14.2%
6	4.98 *(33.08)*	1.79 *(1.75)*	2.16 *(0.99)*		-2.45 *(-2.14)*		19.23 *(1.93)*			4.70 (1.62)	15.1%
7	4.94 *(26.4)*	2.29 *(2.29)*	2.12 *(0.97)*		-2.17 *(-1.87)*			0.048 *(0.17)*		4.47 (1.50)	13.9%
8	4.98 *(29.97)*	2.23 *(2.22)*	2.15 *(0.98)*		-2.13 *(-1.85)*				0.14 *(0.64)*	4.78 (1.62)	14.1%
9	4.90 *(32.38)*	2.54 *(2.55)*		0.13 *(0.12)*	-2.11 *(-1.88)*	12.01 *(0.89)*				3.72 (1.52)	13.9%
10	4.97 *(32.97)*	1.85 *(1.82)*		0.46 *(0.45)*	-2.45 *(-2.13)*		19.82 *(1.96)*			4.55 (1.55)	14.9%
11	4.93 *(26.3)*	2.37 *(2.38)*		0.17 *(0.16)*	-2.16 *(-1.86)*			0.015 *(0.54)*		4.44 (1.48)	13.6%
12	4.97 *(29.9)*	2.31 *(2.33)*		0.20 *(0.21)*	-2.12 *(-1.84)*				0.19 *(0.63)*	4.81 (1.59)	13.7%

The Cohrane-Orcutt method is used to adjust for the first order serial correlation of the errors. The dependent variable is the alog of the number of rights issues per month. mount of capital raised from rights issues per month in real terms. DINT1 and DINT2 are the monthly growth rate of 3-month treasury bills and the monthly growth rate of the Long Term Government bonds respectively. MARKET RUN UP is the 60 day cumulative returns of the FT All Share prior to the beginning of the month .VOLATILITY is the 60 day volatility of the daily returns of the FT ALL SHARE PRICE INDEX prior to the beginning of the month. Change in the coincident and short leading indicators GCOINC and GLEAD is are the monthly change logarithmic growth rate in the Coincident and Short leading indicator supplied by Central Statistical Office measured over three months prior to the month of the offer. DUMMY 1 takes the value of 1 if the month is classified as HOT (Upturn of the business cycle) and 0 if the month is classified as COLD (downturn of the business cycle). DUMMY2 takes the value of 1 if the month is during the second half of the expansion and zero otherwise .ADVERSE SELECTION COSTS is the average of the abnormal announcement day returns of the issues that were announced in the previous 3 months.

Our results from the regression analysis of the rights issue volume indicate that the magnitude of adverse selection costs has an important role to play in the timing of Seasoned Equity offering activity in the UK. When these costs are high, fewer firms decide to raise capital through a rights issue and the amount of capital they raise decreases.

6.6. DO MANAGERS TIME THE RIGHTS ISSUE WHEN THE SHARES ARE OVERVALUED?

One theory about the timing of seasoned equity offering argues that issuer exploit overvaluation. Variations in equity issuance activity is driven by variation in investors' sentiment. Firms issue seasoned capital when investors are willing to pay prices for the issues that are above the fundamentals. Loughran & Ritter (1995) are among the advocates of such a theory. They document a significant underperformance of firms that make a SEO for up to 5 years after the issue which indicates that the issuer was overvalued at the time of the issue. According to them, SEO volume is driven by overvaluation exploitation and to support that they find that the underperformance is higher for the issuers that made the issue in heavy SEO volume periods indicating that in periods of heavy volume issuers are more overvalued than periods of light volume. In chapter 5 we also found evidence that the IPO activity in the UK is also driven by variations in investors' sentiment. Periods of heavy IPO activity are periods when investors pay higher prices for the new issues.

Managers who act on behalf of the interests of existing shareholders may be tempted to make an equity issue when the current share price is higher than its intrinsic value. In such cases more capital can be raised from the issue with a smaller portion of the old shareholders ownership lost to new shareholders. That theory can only explain however the poor long run performances of SEO firms only if the new shares are offered to new shareholders.

The case of rights issues is a very interesting one because the new shares go to existing shareholders. The wealth of existing shareholders is not affected by how much is the price of the issue. Even if the issue is overpriced or underpriced, the existing shareholder will still own the same proportion of the firm after the issue and that will leave them no better off if the issue is overpriced. Managers that make an equity issue with the method of rights issue have no incentive to make the issue at periods when investors are overpaying.

It has been argued however that managers do not necessarily act on behalf of their shareholders' interests but sometimes they seek to maximise their own utility. If the satisfaction they get and their personal remuneration package is linked to the size of the company and the assets they manage, managers will be better off to issue new shares when they are overvalued because more capital will be raised and therefore the company's assets will gave a larger growth. If managers care for their own satisfaction then the timing of the issue at a period when investors are overpaying will enable the firm to raise larger amounts of capital with greater ease. No study has been done in the UK to see whether rights issuance activity in the UK is driven by overvaluation exploitation. To support that overvaluation exploitation in a major driving force in the rights issuance activity we have to find significant underperformance after the issue and significant differences in the post-issue performances according to the intensity of the SEO activity.

We test whether UK SEOs that were announced during Heavy issuance periods have worst post-SEO performances relative to SEOs that were announced in light volume periods. The null and alternative hypothesis are:

Ho: The firms that announced a SEO during heavy SEO volume periods have similar Post-SEO performances with firms that announced a SEO during periods of Light SEO volume periods

He: The firms that announced a SEO during heavy SEO volume periods have significantly worst Post-SEO performances than firms that announced a SEO during periods of Light SEO volume periods

To reject the null hypothesis of similar performance of Heavy and Lights period SEOs we compare the post-SEO performances of firms that announced the issues in Heavy and light SEO volume periods respectively. In order to classify periods as Heavy or light we rank all months from 1/1975 to 12/1996 (264 months) according the 3-month moving average of the amount of capital raised from SEOs in December 1996 prices. The 66 months (25% of the sample) with the highest SEO activity in terms of capital raised are classified as HOT months. The 66 months with the lowest SEO activity are classified as COLD months . The remaining 132 months are classified as OTHER.

In figure 6.7 we have plotted the rights issue Buy and Hold and FTA adjusted Buy and Hold performance in the period 60 months before and up to 60 months after the issue announcement. These returns represent the buy and hold return of an investor that had bought the shares at the end of month -60 and kept them until month t.

As with the SEO findings in the US, we find that firms that make a SEO in the UK exhibit a large price run up prior to the issue. The investor that bought the issuer's share at month -60 would have zero FTA adjusted buy and hold return if he/she has kept the shares until month -15. From that point there is a steep rise in the FTA adjusted returns of 20% up until month -1. At the month of the announcement, we observe a small drop on the returns but after the month of the announcement, returns continue to rise until month +2. Despite the small drop on the month of the announcement, investors that bought the share at month -60 and have kept it until the end of month 0 would have a total FTA adjusted buy and hold return of 22.3% almost all of which results from the large price run up that starts from month 18 prior to the announcement.

After the announcement of the issue, returns continue to rise for 2 more month but from that point onwards the returns start to decline. The post-announcement decrease in returns however is not as steep as the pre-announcement price run up. In table 6.14 we have the average buy and Hold returns of an investor that purchased the shares of the issuer at the end of month -1 relative to the issue. In the first year after the announcement of the issue, shareholders would have lost 1.99% of their total buy and hold return relative to the FTA and 10.17% is lost by the end of year 2 after the announcement of the issue. In the 3rd year after the announcement of the issue, shareholders would have lost 14.03% of their returns. In fact, by the end of year +3 almost all the pre-announcement gains that investors made relative to the FTA, are lost. Furthermore, returns continue to decrease in the fourth year by to reach a buy and hold return to an investor that purchased the shares of the issue at month -1 relative to the announcement to -21.25% and reach a 5 year buy and hold return of -25.13%. The negative post- issue performance is statistically significant at a level of 10% or higher from month +16 onwards. So, firms that make a rights issue underperform relative the FTA in the post- issue period.

Rights issuers also underperform in the period after the issue when we use the industry/ market to book value adjusted performance as well (Panel B of table 6.14). By the end of month 24, an investor that purchased the shares of the issuer at the end of month -1 will have a negative buy and hold return of -5.49% which is marginally significantly negative at 10% one tail tests. By the end of month 36, an investor that purchased the shares of the issuer at the end of month -1 will have a negative Buy and hold return of -7.59% which has a test statistic of -1.88 and by the end of month 48 the buy and hold performance decreases further to -8.49% with a test statistic of -2.01. The 5 year buy and hold performance is -12.07% significantly negative at 5% two tail tests.

TABLE 6.14: POST SEO PERFORMANCE

month after the announcement of the issue	12	24	36	48	60
PANEL A ADJUSTED BY THE FTA					
Buy and Hold Post SEO performance of ALL rights issuers.	-1.99% *-1.61*	-10.17% *-2.59*	-14.03% *-3.09*	-21.25% *-4.15*	-25.13% *-5.48*
PANEL B ADJUSTED BY INDUSTRY AND MARKET TO BOOK VALUE					
Buy and Hold Post SEO performance of ALL rights issuers.	0.99% *0.12*	-5.49% *-1.47*	-7.59% *-1.88*	-8.49% *-2.01*	-12.07% *-2.15*
PANEL C ADJUSTED BY INDUSTRY AND MARKET VALUE					
Buy and Hold Post SEO performance of ALL rights issuers.	0.06% *0.05*	-6.65% *-1.59*	-7.26% *-1.66*	-10.16 *-2.16*	-10.72% *-2.09*

The use of the industry/ market value adjusted performance also produced similar underperformance for the rights issuers (panel C of table 6.14). By the end of month 24, an investor that purchased the shares of the issuer at the end of month -1 will have a negative Buy and hold return of -6.65%. By the end of month 36, an investor that purchased the shares of the issuer at the end of month -1 will have a negative Buy and hold return of -7.26% which has a test statistic of -1.66 and by the end of month 48 the buy and hold performance decreases further to -10.16% with a test statistic of -2.16. The 5 year buy and hold performance is -10.72% significantly negative at 5% two tail tests. Therefore, the use of the industry/ market value adjusted performance provides further evidence that rights issuers underperform in the period after the issue.

The fact that rights issuers underperform after the issue does not in itself indicate that the reason behind this underperformance is that managers deliberately time the offer at periods when the share price of the firm is at the peak and that the drop afterwards is due to investors' concerns that the firm is overvalued. Neither it also indicates that periods of heavy volume are attractive because in these periods issuers' prices are more overvalued. To argue that variations in rights issue volume across time is driven by variations in the degree that these shares are overvalued would require evidence of significant differences in the post-announcement performance of issuers that made the announcement in Heavy and Light volume periods.

Next we compare the Post-SEO performance of Heavy and Light volume period issuers. In table 6.15 we have the industry/market to book value (PANEL A) and industry/market value (PANEL B) adjusted buy and hold post-announcement performance of HOT and COLD market issuers. We find no significant differences in the post-announcement performances of HOT and COLD market issuers.

When we use the industry/market to book value adjusted returns (panel A of table 6.14 and figure 6.8) we find that the two group of issuers have indistinguishable performances up until the end of month 30 after the announcement. At the end of year 1, HOT market issuers have a buy and hold return of 0.06% while COLD market issuers have a negative return of -4.46%. These returns represent the buy and hold return to an investor that has purchased the Rights issuer share at the end of month -1 relative to the announcement. By the end of year 2, HOT market issuers have an average buy and hold return of -3.08% and COLD market issuers have an average buy and hold return of -10.11%. HOT market issuers' returns continue to deteriorate in the third year and reach an average buy and hold return of -9.03%

while COLD market issuers an average buy and hold return are -2.47%. We have to note however that the number of firms in the COLD markets group is small (86 to 73 firms) while in the HOT markets the number of firms more than 6 times larger (523 to 397). That leaves the COLD market group more prone to outliers and hence the more erratic movements in the performances. After year 3, COLD market issuers have significantly worst performances than HOT market issuers. By the end of year 5, HOT market issuers underperformed (not significantly though) firms in the same industry and similar market to book values by 11.20% while COLD market issuers significantly underperform by 34.64%. The difference however between the two groups is not significant with a test statistic of 1.26. We have to note however that due to the data requirement to calculate industry and market to book value adjusted returns (industry classification for issuer and market to book data), the number of the COLD market issuers by the end of year 5 is only 73 firms. When we compare the performance of HOT market issuers with the performance of all the remaining issuers (both OTHER and COLD market issuers) in order to increase the size of the group with which we compare the HOT markets issuers, we find no significant differences. The post announcement of HOT market rights issuers (red line in figure 6.8) is almost identical with the post-announcement performance of the rest of the issuers (black line with yellow stars in figure 6.8).

In panel B of table 6.14 we have the industry and market value adjusted buy and hold returns across HOT and COLD markets (also available in figure 6.9). Again we find no differences in the post announcement return of HOT and COLD market issuers. The 2 year average buy and hold return of HOT market issuers is -4.55% and the average buy and hold return of COLD market issuers is -15.03%. By the end of year 3, the HOT market issuers have an average buy and hold return of -4.27% and COLD market issuers have an average buy and hold return of -8.74%. At no point of time are the HOT market issuers worst performers than COLD market issuers. Again however we have to stress the small number of issuers in the COLD markets group. However, as with the industry/ market to book value adjusted returns, we find that HOT market issuers (red line in figure 6.9) are not worst performers relative to all remaining (both OTHER and COLD) issuers (black line with yellow stars in figure 6.9).

TABLE 6.15: POST SEO PERFORMANCE ACROSS HEAVY AND LIGHT SEO VOLUME PERIODS

PANEL A

MATCHED BY INDUSTRY AND MARKET TO BOOK VALUE

month after the announcement of the issue	12	24	36	48	60
Buy and hold Performance of **HOT** Market Issuers	0.06% (523)	-3.08% (512)	-9.03% (475)	-7.84% (466)	-11.20% (397)
test statistic of difference from zero	*0.02*	*-0.73*	*-1.62*	*-1.19*	*-1.25*
Buy and hold Performance of **OTHER** Market Issuers	3.15% (513)	-4.79% (506)	-8.32% (452)	-6.82% (388)	-8.41% (356)
test statistic of difference from zero	*1.11*	*-1.04*	*-1.20*	*-0.77*	*-0.81*
Buy and hold Performance of **COLD** Market Issuers	-4.46% (86)	-10.11% (85)	-2.47% (79)	-27.40% (73)	-34.64% (73)
test statistic of difference from zero	*-0.76*	*-1.14*	*-0.22*	*-1.82*	*-2.11*
test statistic of difference of ***HOT against COLD***	*0.69*	*0.72*	*-0.52*	*1.19*	*1.26*

PANEL B

MATCHED BY INDUSTRY AND MARKET VALUE

month after the announcement of the issue	12	24	36	48	60
Buy and hold Performance of **HOT** Market Issuers	-00.20% (522)	-04.55% (506)	-04.27% (468)	-06.47% (457)	-08.95% (380)
test statistic of difference from zero	*-0.08*	*-0.77*	*-0.81*	*-1.19*	*-1.41*
Buy and hold Performance of **OTHER** Market Issuers	01.39% (509)	-05.23% (502)	-08.69% (447)	-13.91% (384)	-11.14% (350)
test statistic of difference from zero	*0.50*	*-1.15*	*-1.27*	*-1.58*	*-0.99*
Buy and hold Performance of **COLD** Market Issuers	-02.98% (82)	-15.03% (79)	-08.74% (73)	-14.59% (68)	-18.58% (67)
test statistic of difference from zero	*-0.46*	*-1.13*	*-0.58*	*-1.02*	*-1.18*
test statistic of difference of ***HOT against COLD***	*0.40*	*0.72*	*0.28*	*0.53*	*0.57*
test statistic of difference of ***HOT*** *against all remaining (both* ***OTHER*** *and* ***COLD***	*1.05*	*1.72*	*0.79*	*1.34*	*1.32*

The HOT and COLD periods are classified according to the three-month moving average of the monthly amount of capital raised from Rights Issues in the period January 1975 to December 1996 (264 months) in Dec 1996 prices. The 25% of all months (66 months) with the highest SEO activity are classified as HOT. The 66 months with the lowest SEO activity are classified as COLD. The remaining 132 months are classified as OTHER. In parentheses we have the number of observations

We reach the same conclusion when we use the FTA adjusted post-announcement performances (results not tabulated). The FTA adjusted performances have the benefit of an increased size sample because no market to book or market value data are required. In figure 6.10, we have plotted these performances and we find that the HOT and COLD market issuers have similar performances almost thought out the whole 5 year period. By using the Normal (with no adjustments) post-announcement buy and hold performances in figure 6.11 we also find no differences in the post-announcement buy and hold returns of HOT and COLD market Issuers .

Our results indicate that overvaluation exploitation is not a driving force in the timing of Seasoned equity issues in the UK. Firms that announce a rights issue in periods of heavy activity do not have more overvalued share prices relative to firms that announce a rights issue in periods of light activity. Heavy volume periods do not offer the advantage to the issuer to issue at higher prices. That result is in line with our findings earlier in the chapter that investors do not see a rights issue announcement as an attempt to exploit overvaluation and do not mark down the price of an issuer that has a large price run up. That finding is also in line with the theoretical framework of rights issues. Rights issues eliminate the potential of exploiting overvaluation for the benefits of existing shareholder. Shareholder do not benefit from timing the issue at periods when the share prices are overvalued. the question however that arises and has to be dealt by future research is why do rights issuers underperform in the long run.

6.7.CONCLUSIONS

Seasoned equity offering activity in the UK varies across time. The most established theory about the time series variation in the volume of US SEOs is that managers, in order to minimise their cost of capital, exploit the new shareholders in favour of existing ones by timing the issue at period when share prices are above their intrinsic values. The time varying pattern of UK SEOs however challenges that theory since, in the UK, the rights issue method of issuing new shares, eliminates the potential of managers exploiting outside investors for the benefits of existing shareholders. Therefore, we can not say that firms time the rights issue when the shares are overvalued to benefit their existing shareholders against the new ones. In line with this argument we find evidence that a rights issue is not considered by investors as an attempt to exploit overvaluation. Equity issues by firms which are more likely to be overvalued, that is firms with large price run-up in the period prior to the announcement, have more positive announcement returns relative to firms with small price run-ups which are less likely to be overvalued. Even stronger evidence against the overvaluation exploitation in the timing of rights issues comes from the post-announcement performance of issuers. Even though we find that the issuers underperform, we find no relation between the intensity of SEO volume and performance. Rights issues announced in periods of heavy SEO activity are not more overvalued than issues announced in periods of light SEO volume. SEO volume in the UK is not driven by overvaluation exploitation.

In contrast with the overvaluation exploitation theory we find evidence in favour of the effect that adverse selection costs have on the timing of SEOs. As with the SEOs in the US, the announcement of a rights issue causes the share price of the issuer to drop by 1.79% on average. The magnitude of the drop has a significant impact on the rights issue volume. More firms make a rights issue and more capital is raised from rights issues during periods when the average adverse selection costs of the previous quarter are smaller.

This chapter also examined the reasons behind the negative price reaction on the announcement of the rights issue. We find evidence against the price pressure and debt coinsurance theories since these stories predict larger price drops for larger issues and we find an insignificant relation between the size of the issue and the magnitude of the price decline. Overvaluation exploitation is also not powerful to explain the negative price reaction since firms with larger price run-ups in the period prior to the issue which are more likely to be overvalued have less negative announcement returns which is against the predictions of the overvaluation theory. We find however that the market views a rights issue as a bad signal for future earnings. Firms with high growth in their earnings in the years prior to the announcement have the larger price drops and firms with high leverage also suffer significant negative returns on the announcement of the issue. The market reacts more negatively to rights issues announced by firms with large earnings growth in the pre-announcement years and that is consistent with the market taking a view that the high earnings growth may not continue in the future.

In line with the findings of Choe, Masulis and Nanda(1993) we report that announcement period returns are higher (less negative) during the upturn of the business cycle relative to the downturn of the cycle. The average issuer can achieve 1.0% higher returns on the announcement of the rights issue if that takes place during the expansion which is translated to a save of £2.3m in terms of its market value or 4.7% of the amount of capital that is raised for the average issuer (prices of December 1996). This difference in the adverse selection costs between upturns and downturns of the business cycle is not caused by differences if issuers' growth opportunities or other firm characteristics. This difference is also not caused by more rights issues being announced during an expansion to fund acquisitions or future development which have higher announcement returns. Choe, Masulis and Nanda(1993) argue that the reason behind that difference is that investors are less concerned that managers may be exploiting overvaluation with the new issue during the upturn of the cycle when the growth opportunities are better relative to the downturn when investment opportunities are few. We do not find that the negative price reaction is caused by investors concerns that the issuer is overvalued but that the market fears that the profitability of the firm will be hit after the issue. Therefore, the differences in the announcement period returns across the upturn and downturn of the business cycle should be driven by less concerns about the future profits of the issuers. It is not illogical to assume that the earnings are more likely to be hit during periods of deteriorating economic conditions and therefore a more negative price response should take place during the downturn of the cycle.

CHAPTER 7: THE TIMING OF UK TAKEOVER BIDS THAT ARE FINANCED WITH EQUITY

7.1 INTRODUCTION

Initial public offerings and seasoned equity offerings are not the only corporate actions that exhibit large variations in the volume of activity across time. Takeover activity also has been found to exhibit similar patterns. There are periods when the number of firms that engage in takeover bids increases dramatically and other periods when the number of bids diminishes, see Sudarsanam (1995), Weston (1996) and Golbe &White (1988) among others.

Not only do we see that the number of takeover bids varies across time but also significant variations in the preferred method of payment for the proposed takeover bid. In some periods, most bidders prefer to use cash to finance the deal while in other periods bidders tend to use equity. Sudarsanam (1995) presents evidence that cash offers is the most preferred method of payment in the period 1972 to 1992 in the UK but there are years such as 1986 and 1987 where the majority of the takeovers were financed with equity. Frank, Harris & Mayer (1988), find similar variations in the US. From 1970 to 1974 60% of bids were financed with equity while in 1980 to 1984 only 23% of bids were financed with equity.

Numerous factors can affect the choice of the method of payment of the takeover bid. Obviously firms with little cash in their availability are less likely to use cash to finance the bid while cash rich companies have that option open. Tax considerations, leverage ratios and the choice of accounting policies that the bidders employ for the acquisition are also factors that may affect the choice of payment. Legislation may also affect the method of payment since in the UK and for certain types of bids the bidders are not able to use only equity but have to offer a cash alternative as well. The mood of the bid also has a significant effect on the method of payment with hostile offers usually being financed with cash while friendly bids are usually financed with equity. Large institutional shareholdings in the bidder decrease the probability of an equity financed takeover bid and bidders that have high growth and investment opportunities use more equity to finance the bid while bidders with high levels of tangible assets are inclined to use more debt and cash financing. If the bidders' management want to maintain their control of the firm at the same level they will not use equity to finance the bid but cash. Economic conditions and the state of the stock market also affect the choice of payment. During bull markets equity is more likely to be used while cash is dominant in bearish markets. The method of payment for the takeover bid might also be determined according to what method minimises the cost of the acquisition. If managers think that using cash will result to a lower cost of the takeover then cash will be used to persuade the target firm' s shareholders to sell their shares. If equity reduces the cost of the acquisition, then managers will propose equity as a mean of payment to the target firm's shareholders and it's managers. The choice of the method of payment is a trade off between the various factors above.

The existence of market imperfection such as information asymmetries creates an environment where managers could exploit the inside information they posses which allows them to estimate the intrinsic value of the firm with greater accuracy relative to outside investors. Under the assumption that managers seek to maximise the utility of their shareholders, the bidder's shareholders will benefit if the method of payment is an overvalued stock. Suppose for example that a bidder can acquire a target by offering £1m in cash or, if the current share price of the bidder is £1, by offering 1m shares. If managers, using the inside information they have, estimate that the true value of the share is for example £0.90 then they will be better of using equity to finance the deal. In such a case they will offer to the target firm's shareholders, shares that are currently worth £1m but their true value is only £0.9m.

How often equity is used as a method of payment at different points of time should be determined by how attractive that option is at these points of time. As we said earlier, a larger number of factors can affect the choice of payment. The issue however is how the factors that affect the method of payment can explain the time series variation in the equity financed takeover bids. Tax considerations indicate that in some acquisitions, the target firms' shareholders may be better off by receiving shares rather than cash. By receiving shares they defer the payment of capital gains tax which is paid immediately when they receive cash. There are investors however, such as pension funds, charity trusts, as well as individual investors for up to a maximum amount, that do no pay any capital gain tax. So, whether cash or equity will be more beneficiary for target firms shareholders than cash and therefore more likely to be accepted depends on the shareholder "profile" of each target. We see no reason that the tax consideration may exhibit such large time series variation that can account for the variability in equity financing over time.

Cash availability and leverage rations should also play an important role in the method of payment. Firms with deficient amounts of cash and high leverage ratios which are in difficulties in borrowing money from banks are more likely to resort to equity financing for the takeover bids. The amount of cash available and the debt to equity ratios are not stable across time. Even though firms have in mind a long term target leverage ratio, variations can occur over time. Periods when economy is booming are periods when firms are more likely to generate cash from their operations and also periods when banks are more willing to lend money. On the other hand, during periods of gloomy economic conditions, cash availability is minimised and bank lines of credit more difficult to get. If cash availability and leverage ratios affect the method of payment then more cash financed bids should be observed during periods of improving economic conditions. Sudarsanam (1995) reproduces evidence from the UK central statistical office that in years 1985 to 1987, when the UK economy experienced an economic boom, the equity financed bids is more that 52% of all bids and cash bids are less than 35% of all bids creating doubts whether cash availability and leverage rations can explain the time series variation in the volume of equity financed bids.

Firms that have high intangible assets are more likely to use equity to finance the bid. Those firms are firms whose value is based on the future investment opportunities. This firms with high Q ratios and market to book values are regarded as growth and glamorous stocks. It is usually the case that these stocks have experienced an increase in their share prices in the recent past. Firms are more likely to have good future prospects when the economy is booming. During the expansion phase of the business cycle, share prices are rising, market to book values are rising and investors are prepared to pay high multiples. Therefore, firms are more likely to use equity during periods when economic conditions are improving.

The mood of the bid has a significant effect on the choice of payment. Hostile offers are financed predominantly with cash and friendly bids are financed with equity. If there are periods when most bids are friendly then those periods should be periods when more equity financing should occur. Large institutional shareholdings and managers' will to maintain control increase the likelihood of cash offers but we can not see how these two factors can explain the significant variation in equity financed takeover activity across time.

One more factor that might affect the choice of payment is the management' incentives to minimise the cost of the acquisition. If there are periods when the use of equity results to a lower cost of the acquisition then equity might be more intensively used in these periods. Managers that look at ways of minimising the cost of the acquisition are tempted to use equity to fund the acquisition when the equity is overvalued. Loughran & Ritter (1995) argue that significant time series variation in investors' sentiment cause a variation in the degree of overvaluation. Periods when investors' sentiment is high are periods when shares are overvalued and more firms resort to equity issues to exploit that overvaluation. If the magnitude of overvaluation varies across time, and the motive behind equity takeover bids is to exploit overvaluation, then we should see that more firms will finance a bid with equity in periods when their shares are more overvalued.

Even though managers, in theory, could be exploiting overvaluation when they use equity to finance a takeover bid, that does not necessarily mean that they do so. To argue that managers use equity to finance a bid only when the current share price is higher than its intrinsic value, would require evidence of a significant underperformance of the bidders after the bid. Investors are aware of managers' incentives to use equity as a method of payment to finance the bid if equity is overvalued. If bidders that use equity to finance the bid exploit overvaluation, the announcement of an equity financed bid could send signals to the market that the firm is currently overvalued. Therefore, a correction in firms' valuation by the market should occur. Bidders that exploit overvaluation should underperform after the bid as investors realise that the price of the bidder on the announcement of the takeover proposal was higher than its fundamental value and mark down the price of the bidder.

Previous research has documented that bidders perform badly after the bid. Aggarwal, Jaffe and Mandelker (1992) report a 5 year Cumulative abnormal return adjusted for firm size and beta risk of -7.38%. Frank & Harris (1989) find that after controlling for size, bidders perform badly in the 2 year after the takeover. The smaller bidders underperform by 20.8% and the larger bidders by 11.7%. (for a more comprehensive review of post-bid performance of bidders see section 2.4.3). Significant variations in the post-takeover performance exist according to the method of payment. Frank, Harris and Mayer (1988) report that bidders that financed the bid with equity have significant negative abnormal returns for up to 2 years after the issue. Frank, Harris and Titman (1991) also find that the equity financed bids have negative monthly returns in the 36 months after the takeover but different benchmarks produced different results with some producing significant negative performances and other insignificant ones. The difference in the monthly returns between all cash and all equity bids ranged from 0.44% to 0.72% per month and the test statistics were from 1.37 to 2.57 varying according to the methodology used.

The difference in the post-announcement performance between equity and cash financed takeover bids is very interesting. We are unaware of any studies that establish a link between the choice of method of payment and the profit potential of the takeover bid. In other words, there is no evidence that equity is used to finance takeover bids that are seen by managers as less profitable a priori than takeover bids that are financed with cash. If that was the case then we could have argued that the poor performance of equity bidders can be attributed to the low quality of the proposed bid. There are also no evidence suggesting that equity financed bids are less successful than cash financed bids. In fact, Travlos (1987) finds that 32 % of cash financed bids are unsuccessful and only 16% of equity financed bids are unsuccessful.

If firms that make a takeover bid financed with equity underperform and those that use cash do not underperform, we could argue that the reason behind the underperformance is that the method of payment reveals to investors the true value of the bidder. The market might perceive bidders that use equity to finance the bid as overvalued and they mark down their share prices while bidders that use cash are considered to be undervalued and therefore investors increase their valuations of those companies.

The poor long run performance of bidders that use equity to finance the bid alone however does not automatically indicate that overvaluation exploitation is the driving force behind the variability in equity financed takeover volume. Firms might use equity to finance a bid when they are overvalued but that does not explain why more firms use equity in certain periods of time. These high volume periods should have something special, they must offer higher degree of overvaluation than periods when volume is low. If volume of equity financed takeover bids is driven by overvaluation exploitation we should see that periods of heavy equity financed bids activity should be periods when bidders are more overvalued relative to periods of "Light" equity financed bids activity. If during periods of heavy volume bidders are more overvalued then those bidders must have worst port-announcement performances relative to bidders that make the announcement during low volume periods and therefore are less overvalued. To safely argue that the volume of equity financed takeovers is driven by overvaluation exploitation we should find significant differences in the post-bid performances of bidders that make the bids in heavy and light volume periods.

This chapter investigates whether the time series variation in the takeover bids that are financed with equity is driven by overvaluation exploitation. The main question we try to answer is whether periods when the percentage of bids that are financed with equity is high are periods when bidders are more overvalued than in periods when fewer firms use equity as the method of payment.

Several studies have found that on the announcement of a takeover bid a mark down on the share price of the bidder occurs. Servaes (1991) reports a significant at 5% drop of 1.07% . Firth (1980) finds that bidders in the UK in the period from 1969 to 1975 have significant negative return on the month of the announcement of the bid. Successful bidders experience a drop of 6.0% and unsuccessful bidders have a slightly larger drop by 6.3%. The method of payment however has a significant effect on the magnitude of the announcement period returns. Servaes (1991) finds that the average cumulative return between the announcement day and the delisting or the effective day for 142 takeover bids financed with equity is -5.86% while for 172 bids that were financed with cash the returns were +3.44%. In 66 bids where a mixture of cash and equity was used the average cumulative abnormal return was -3.74%. Eckbo and Langhor (1989) find that takeover bids in France that are financed only with cash have a positive impact on the price of the bidder while bids financed with equity have a negative impact . Travlos (1987) finds that in the announcement period returns for cash offers is 0.24 % not significant from zero (Z= 1.11) and for equity offers the return is -1.47% which is highly significantly different from zero (Z =-5.07). Travlos (1987) also finds that the two day cumulative abnormal returns were higher when the proportion of the transaction funded through the offer of shares is high. Amihud, Lev and Travlos (1991) report a drop of 1.19% for equity offers and an increase of 0.44% for cash offers. and Brown & Ryngaert (1991) also find negative and significant returns of -2.48% for equity offers and insignificant returns for cash offers of -0.06%. Harris & Titman (1991) document that cash bids have a positive but insignificant effect on the price of the bidder while equity bids reduce significantly the price of the bidder by 3.15%.

A number of explanations have been proposed to explain that difference in the announcement period returns of equity and cash offers. One theory argue that if the bidder intends to finance the equity offer with a new issue of shares that will result to a transfer of wealth between the debtholders and the shareholders. Debtholders will gain from the reduced bankruptcy risk that results from the reduction of the leverage that results from the new equity issue. What debtholders gain represents a loss to the shareholders, hence the drop on the announcement of the bid. The drop for the bidder however should be larger if the size of the target relative to the size of the bidder is large. Targets which are large relative to the bidder require a larger issue of new shares and therefore the transfer of wealth from shareholders to bondholder is greater in cases when the target is a larger company. If the difference in the announcement period returns between cash and equity bids can be explained by the transfer of wealth from shareholders to debtholders then a larger drop should be expected in larger acquisitions. Servaes (1991)however finds that the size of the target over the size of the bidder is positively related to the announcement period returns. Travlos (1987) finds a negative relation between the relative size of the target of the bidder but the relation is not statistically significant. Furthermore, Travlos (1987) finds that the announcement of an equity financed takeover bid reduces the value of the corporate bonds of the bidders while cash financed bids increase the value of the corporate bonds of the bidder. If the equity financed bids enhances debtholders value due to the transfer of wealth from shareholders then bonds values should increase and not decrease as Travlos (1987) finds.

Another theory argues that the drop on the share price of the bidder on the announcement of the equity financed bid is caused by the increase in the supply of shares. The new issue of shares will increase the supply and since the demand for the firm's shares stays the same, according to the supply and demand law, the prise should fall. This price pressure theory as it is called however predicts that the acquisition of larger targets that increase the supply of shares by larger percentages should be accompanied by more negative price reaction for the bidder. As we saw earlier however, the evidence do not suggest that a strong negative relation between the size of the acquisition and the market reaction exists.

The most publicised reason for the drop on the announcement of bids that are financed with equity relies on the existence of information asymmetries between managers and investors. As we saw earlier, investors and target firms' shareholders are aware of managers' incentives to use equity when the shares are overvalued and so they perceive an equity financed bid as an attempt to exploit information asymmetry and overvaluation. Hence, they mark down the share price of the bidder to correct for the overvaluation. That drop reduces the market value of the bidder and represent an indirect cost to the acquisition for the bidder, and adverse selection cost.

While in the SEO literature there are studies that link the decision to issue equity with the magnitude of adverse selection costs, in the takeover literature that issue has not been researched. In chapter 6 we found a significant relation between the rights issue volume, both in terms of number of firms per month and the amount of capital raised per month, and the average announcement period abnormal returns of the previous quarter. Periods when the adverse selection costs are low are periods when SEO volume is high. If adverse selection costs are of paramount importance for the timing of equity financed takeover bids, we should see more firms using equity as a method of payment in periods when adverse selection costs are lower. This chapter investigates the relationship between the magnitude of adverse selection costs associated with takeover bids that are financed with equity and the volume of equity financed bids.

Evidence from the SEO literature suggest that adverse selection costs associated with the announcement of a SEO are lower when the economy is during the phase of an economic expansion. That happens because during periods of improving economic conditions firms are more likely to have good growth opportunities and the announcement of a SEO creates less concerns that managers could be exploiting overvaluation. In chapter 6 we report that the announcement of a rights issue is accompanied by less negative returns when that takes place during the upturn of the business cycle. If periods of improving economic conditions help reduce investors' concerns that managers may exploit overvaluation in the timing of equity financed bid then we should find significant lower adverse selection costs for bidders that announce the bid during the upturn of the business cycle relative to bidders that announce the bid during the downturn of the cycle. The effect of the business conditions on the announcement period return of takeover bids that are financed with equity is an issue that we also investigate in this chapter.

This chapter extends the takeover literature by documenting the announcement period returns of equity financed takeover bids across different phases of the business cycle and the relation between adverse selection costs and the volume of equity financed bids. The final contributions of this chapter is to use industry/ market to book value and industry/market value adjusted returns to look at the post announcement performance of takeover bidders partitioned by the method of payment and according to the intensity of equity financed bids volume to see if the volume of equity financed takeover bids is driven by overvaluation exploitation.

The main findings of this chapter can be summarised as follows:

1. The volume of equity financed takeover bids in the UK varies across time.
2. Firms are more likely to use equity to finance takeover bids during the upturn relative to the downturn of the business cycle.
3. The announcement of a takeover bid causes the share price of the bidder to drop by an average of 1.07%. The equity financed takeover bids have significantly more negative price reaction than the cash financed takeover bids.

4. Adverse selection costs associated with the announcement of an equity financed takeover bid are lower during periods of improving economic conditions but have no impact on the equity financed takeover activity. The percentage of bids that are financed with equity does not increase when adverse selection costs are lower.
5. Bidders have a 3 year buy and hold underperformance of 7% relative to firms in the same industry and similar market to book value or similar market value.
6. Firms that use equity to finance a takeover bid have significantly worst performances relative to firms in the same industry and similar market to book or market values. The 3 year buy and hold underperformance of equity bidders is 15% to 18%. They also have worst performances than bidders that use cash to finance the bid which indeed outperform the benchmarks used.
7. There is no relation between the volume of equity financed takeover bids and the bidders post-announcement performance. We find no differences in the post announcement performance of bidders that use equity to finance the bid in heavy volume periods relative to the post announcement performance of bidders that use equity in low volume periods. Heavy volume periods are not periods when bidders that use equity are more overvalued than all other periods.

The remaining of the chapter follows like this. In the next section we present our evidence on the takeover activity in the UK followed by an analysis of the effect of the business conditions on takeover activity and on the adverse selection costs associated with the announcement of an equity financed takeover bid. In the last part we present our evidence on the post-bid performance partitioned by the method of payment and the relation between takeover volume and post-announcement performance.

7.2. TAKEOVER ACTIVITY IN THE UK ACROSS TIME

The prevailing belief in the mergers and takeover literature is that mergers and takeovers come in waves. From our investigation of the takeover activity in the UK we provide evidence supporting that wave pattern. In table 7.1 we present the number of takeover bids per year[12]. Takeover activity exhibits a high volume in years 1986 and 1987 with 241 and 216 bids made in these years respectively.

Takeover activity remains quite high at a level of more than 100 bids every year up until 1991. From 1992 to 1995 takeover bids decrease in numbers to below 100 per year with a sample low of 68 bids made in 1992 and 1993. In total, throughout the 11 year period of our sample, 1534 firms announced a takeover bid.

Through the 11 year sample period, 1986 was the year with the highest number of takeover bids that were financed with equity, 105 (third column of table 7.1). Activity of equity financed bids remained high at 1987 with 93 bids while in the early 90's equity financed bids are few. In 1994 only 17 bids that were financed with equity were announced. In the last column of table 7.1 we present the percentage of equity financed bids over all takeover bids in our sample per year. The equity financed bids were very popular in 1985 to 1987 when on average around 40% of all the bids were financed with equity. The same percentages are plotted in figure 7.2 (solid vertical bars). In 1990 only 16% of all bids were financed with equity which is the lowest in our 11 year sample period. On average, throughout the 1985 to 1995 period, a third of all takeover bids were financed with equity (32.3% using monthly data) which is close to the 36% that is reported by Sudarsanam (1995).

From the sample of 1534 takeover bids, we have excluded those bids for which the DATASTREAM mnemonic for the bidder or share prices were not available. That excludes 560 bids. From the remaining 974 bids, the method of payment was not identified for 63 firms leaving a size of 911 bids. For 11 bids the announcement day was not identified and for 57 bidders the abnormal announcement period returns could not be calculated due to the lack of data in DATASTREAM or because they coincided with the announcement of a rights issue and therefore were dropped from the sample. That leaves us with a total sample of 843 takeover bids.

[12] details of the data collection and the source of the sample can be found in section 4.1

TABLE 7.1: ANNUAL VOLUME OF TAKEOVER ACTIVITY IN THE UK FROM 1985 TO 1995

YEAR	NUMBER OF ALL TAKEOVER BIDS	NUMBER OF TAKEOVER BIDS FINANCED WITH EQUITY IN WHOLE OR IN PART	PERCENTAGE OF BIDS FINANCED WITH EQUITY OVER ALL TAKEOVER BIDS
1985	139	55	40%
1986	241	105	44%
1987	216	93	43%
1988	187	56	30%
1989	186	41	22%
1990	140	23	16%
1991	115	28	24%
1992	68	18	26%
1993	68	22	32%
1994	72	17	24%
1995	102	24	23%

Table 7.2 presents the distribution of the sample of the 843 bids according to the method of payment. 105 bids were financed solely with cash, 180 bids were financed solely with equity and 83 bids were financed with other instruments mainly convertibles. There is however a large number of bids that finance the bid with a mixture of cash, debt, and equity in various proportions. So for example, 89 bids were financed with cash or loans and for 214 bids the target shareholders were given the option to choose between cash or equity.[13] In 64 bids the offer included both equity and cash and in 24 the target shareholders were given the option to choose equity or equity and cash. In total, 482 bids have used in whole or in part equity to finance the bid and this is the sample that we use as the takeover bids that are financed with equity.

[13] In certain types of bids such as when the bidder acquires shares carrying more than the 30% of the voting rights of a company a cash offer or a cash alternative must be offered.

Table 7.2 also reports the average and median announcement period abnormal returns for all takeover bids in our sample and also partitioned with the method of payment. The announcement period is days -1 to 0 with day 0 being the day of the announcement of the bid. The average announcement period abnormal returns for all takeover bids in our sample is -1.07% significantly different from zero with a test statistic of -5.42. 65% of all bids were accompanied with negative abnormal returns for the bidders and only 35% of the announcements caused positive abnormal announcement period returns for the bidder. The median announcement period return is -0.91% also significantly different from zero.

We find big differences in the announcement period abnormal returns according to the method of the payment. The bids that are financed with cash only or with cash or loans are the only group of that are characterised by positive returns on the announcement of the bid with 0.55% and 0.23% returns respectively but without being significantly different from zero. The bids that are financed with convertibles have significant negative average return of -1.43%. The bids that are financed only with equity have an average return of -0.73% which is marginally significantly from zero at 10% one tail tests . Bids where the target firms' shareholders are offered a choice between cash or equity have significant negative returns of -1.88%. In general, the offers that have some form of equity in the financing package of the bid, have an average announcement period return of -1.54% (median -1.36%) with a test statistic of -6.76 indicating that it is highly significantly different from zero. Not only were the equity bid announcement period returns significantly different from zero but they were also significantly different from the offers that had some form of cash in the financing package of the deal with a test statistic of -4.65.

Our results for the cash offers are in line with the literature findings. Travlos (1987), Amihud, Lev &Travlos (1991), Frank Harris & Titman (1991) find that cash offers have positive but insignificant announcement period returns.

The literature findings however for the only equity offers are different from our findings and indicate a significant negative return. Travlos (1987) finds that for only equity offers the return is -1.47% with a test statistic of -5.1. Amihud, Lev and Travlos (1991) and Brown & Ryngaert (1991), Frank Harris & Titman (1991) also find significant negative returns for equity offers. We find that the bids that used a mixture of equity and other options have significant negative returns.

TABLE 7.2: ANNOUNCEMENT PERIOD ABNORMAL RETURNS OF TAKEOVER BIDS PARTITIONED WITH THE METHOD OF PAYMENT

	average announcement period return [1]	t statistics for difference of average returns from zero	number of observations	median announcement day return	t statistics for difference of medians from zero	t statistics of difference of some form of Equity bids (last 4 rows) from some form of cash Bids (second, third and fourth row)
ALL BIDS	-1.07%	*-5.42*	842 (²)	-0.91%	*-4.61*	
ONLY CASH OFFERS	0.55%	*1.29*	105	0.06%	*0.14*	
CASH OR LOAN	0.23%	*0.74*	89	0.017%	*0.03*	
ALL CASH OR EQUITY PLUS CASH	-2.14%	*-3.67*	36	-1.64%	*-2.82*	
CONVERTIBLES	-1.43%	*-2.49*	83	-1.37%	*-2.38*	*-2.54*
ONLY EQUITY BIDS	-0.731%	*-1.49*	180	-0.737%	*-1.51*	*-1.38*
EQUITY OR CASH (OPTION)	-1.88%	*-6.48*	214	-1.51%	*-3.67*	*-3.58*
EQUITY AND CASH[3]	-2.80%	*-4.81*	64	-2.46%	*-4.23*	*-4.44*
ALL EQUITY (OR EQUITY AND CASH)	-1.31%	*-0.88*	24	-0.87%	*-0.59*	*-1.02*
THOSE THAT HAVE EQUITY IN SOME FORM (LAST 4 ROWS)	-1.54%	*-6.76*	482	-1.367%	*-5.94*	*-4.65*

1.the abnormal announcement period returns are calculated according to the market model. See section 4.2 for more details The announcement period is the days -1 to 0 when day 0 is the day of the announcement of the bid. The returns of day +1 were not significantly different from zero

2. The total number of bids of 842 is not excluded in the categories below. There were 47 more bids that used various forms of payments such as debt, debt and equity, debt and cash for which we do not present their announcement period return.

3. In the cash or equity case, each shareholder of the target may elect to receive all cash or all equity. the bidder will provide the cash for its own resources or through an underwriter. In the latter case, the target shareholders tender their shares to the bidder which issues new shares to the underwriter; the underwriter then remits the amount prescribed by the cash alternative to the tendering stockholders

As we saw earlier, a number of theories has been developed to explain the difference in the announcement period returns across equity and cash financed bids. The price pressure, debt co-insurance and information asymmetry theories compete to explain that interesting price pattern. Later on in this chapter we are able to test the various stories using our sample and see which one can provide a strong explanation. First we look at how the takeover activity behaves across the business cycle.

7.3 Takeover activity across the business cycle.

In chapters 5 and 6 we found that the state of the economy has a significant effect on the volume of Initial Public Offerings and a weak effect on the Rights issuance activity. More firms make an IPO and a rights issue and more capital is raised from IPOs during the upturn from the business cycle. The business cycle may be a major driving force of takeover bids volume.

During the upturn of the business cycle firms face more and better investment opportunities. This is the period when firms expand their businesses and their sales are more likely to grow. The acquisition of another company provides a quicker and easier way for a firm to expand and to take advantage of the new investment opportunities rather than expanding internally which requires a lot more planning and time to materialise into revenues and profits.

During the expansion phase of the cycle it is usually the case that share prices are rising faster than the downturn of the cycle. Therefore, the attractiveness of equity as a method of payment in the upturn should increase relative to the downturn. It is expected in some sense to see more equity financed bids during the upturn of the cycle. Sudarsanam (1995) reports that the choice of payment is sensitive to the stock market conditions. More firms use equity during rising markets.

In order to test if the level of the economy has an effect on the takeover activity, we investigate the number of takeover bids across the upturn and the downturn of the business cycle. Table 7.3 reports the results.

TABLE 7.3: TAKEOVER ACTIVITY ACROSS THE UPTURN AND DOWNTURN OF THE BUSINESS CYCLE

	UPTURN[1] of the Business Cycle	DOWNTURN of the Business Cycle	t statistic of the difference between upturn and downturn
Average number of takeover bids per month	**11.26**	**10.18**	**1.02**
Median number of takeover bids per month	**10**	**9**	**0.94**
Average number of takeover bids financed with equity per month	**4.61**	**2.75**	**3.25**
Median number of takeover bids financed with equity per month	**3**	**2**	**1.75**
Average Percentage of Takeover bids financed with equity per month	**37.2%**	**27.7%**	**4.71**
Median Percentage of Takeover bids financed with equity per month	**37.4%**	**25.0%**	**6.12**

1. The upturn and downturn of the business cycle is determined according to the coincident indicator

We find that during the upturn of the business cycle we have 11.26 takeover bids per month and we have 10.18 bids per month in the downturn of the cycle. The difference between the upturn and downturn is not significant with a test statistic of 1.02. When we look at the takeover bids financed with equity at least in part we find that 4.61 firms per month on average make a takeover bid financed with equity during the upturn of the business cycle (median 3) while in a recession only 2.75 firms do so (median 2). The difference is significant at 1% level of statistical significance with a test statistic of 3.25. The difference in the medians is also significant with a test statistic of 1.75.

In terms of the percentage of bids that are financed with equity over all takeover bids, we find that during the upturn of the cycle 37.2% of all takeover bids per month are financed with equity while in the downturn of the cycle, the percentage of bids that use equity over all takeover offers per month drops to 27.7%, a difference of 10% from the upturn which is highly significant with a test statistic of 4.71. The evidence presented here support the argument that, if no control variables are taken into account, equity financed takeover activity is significantly higher during the upturn of the cycle.

When we look across the whole duration of the business cycle (vertical bars in figure 7.3) we see that the in the first part of the upturn 35.65% of all bids are financed with equity, in the middle part of the expansion the percentage increases to 44.21% and just before the peak 32.46% of bidders include equity in the payment package in the takeover proposals. As the economy enters the recession, the percentage drops to 26.18% and drops even further to 23.77% in the middle of the recession. Just before the end of the downturn, equity bids increase relative to all bids to 33.08%.

These results shows that the whole takeover activity is not significantly higher during the upturn of the business cycle but that the takeover activity that is financed with equity exhibits a significantly higher intensity during the upturn of the business cycle. Approximately 10% more firms use equity to finance the bid in the upturn relative to the downturn of the business cycle.

Such a result is not extraordinary. As we said earlier the rising stock markets during the upturn and the resulting lower cost of the equity financed acquisition could account for such an increase. The SEO literature however provides an alternative explanation for the increase in SEO activity during the upturn of the cycle. Choe, Masulis and Nanda (1993) argue that for the SEOs, the increase in equity financing during the upturn of the cycle is caused from the fact that these periods are characterised by lower adverse selection costs. In chapter 6 we found that the number of rights issues in the UK is slightly higher during the upturn of the cycle and that the adverse selection costs associated with the rights issue are lower during the expansion phase of the cycle. No research has been done to see whether the increased equity financed takeover activity during the upturn of the cycle is caused by less negative price reactions on the announcement of the equity financed bids during the upturn. In the next part we seek to find if that story can be applied to takeovers.

The null and alternative hypothesis we test is the following.

Ho: The announcement period abnormal returns of a takeover bid that is financed, in whole or in part, with equity and is made during the upturn of the business cycle are the same as with the announcement period abnormal returns of a takeover bid that is financed, in whole or in part, with equity that is made during the downturn of the business cycle

He: The announcement period abnormal returns of a takeover bid that is financed, in whole or in part, with equity and is made during the upturn of the business cycle are significantly higher than the announcement period abnormal returns of a takeover bid that is financed, in whole or in part, with equity that is made during the downturn of the business cycle

We seek to reject the null hypothesis in favour of the alternative. To do so, we compare the average and median announcement period abnormal returns of bids that are financed with equity across the upturn and downturn of the business cycle. If average and median returns are significantly higher during the upturn of the cycle we will reject the null hypothesis in favour of the alternative.

7.4 Announcement day returns of Takeover Bids across the business cycle.

In table 7.4 we present the announcement period abnormal returns across upturns and downturns of the business cycle. We find that a takeover bid that is financed with equity is accompanied by higher returns when the announcement is made during the upturn of the business cycle. The average announcement return is -1.121% during the upturn of the cycle and –2.229% during the downturn of the cycle. The difference is significant with a test statistic of 2.55. Median returns were also higher in the upturn, -1.109%, relative to the downturn, -1.629%, a difference with a test statistic of 1.74. During the upturn of the cycle 67% of equity financed bids are accompanied by negative returns while in the downturn of the cycle the percentage of equity bids with negative announcement returns is 75%.

In figure 7.3 we have plotted the announcement period return of equity financed bids across the duration of the business cycle (solid blue line). In the first part of the upturn the average return is -1.16% and becomes -1.36% in the middle of the expansion. The least negative returns are in the last phase of the upturn where the equity financed bid is accompanied on average by a drop of -0.71% . In the first part of the downturn the average market reaction to a takeover bid is -2.31% and becomes -1.85% in the middle of the recession. At the end of the recession, the average announcement period abnormal return is -2.70% which is the most negative point across the cycle.

Summarising, we find that firms that announce a takeover bid that is financed with equity face less negative returns when the announcement is made during the upturn of the business cycle relative to the downturn of the business cycle. This difference of 1.1% translates to a save in the market value of the bidder by £ 5.2 m.[14] if the announcement takes place in the upturn of the cycle.

TABLE 7.4:ANNOUNCEMENT PERIOD ABNORMAL RETURNS OF EQUITY FINANCED TAKEOVER BIDS ACROSS THE UPTURN AND DOWNTURN OF THE BUSINESS CYCLE

PERIOD OF THE CYCLE	UPTURN [1]	DOWNTURN
Average Announcement period abnormal returns of equity financed takeover bids	-1.121%	-2.229%
Median Announcement period abnormal returns of equity financed takeover bids	-1.109%	-1.629%
Number of observations	297	185
Percentage of positive abnormal announcement returns	33.1%	24.6%
Percentage of negative abnormal announcement returns	66.9%	75.4%
Test statistic of difference from zero	-3.45	-7.08
Test statistic of difference of averages between upturn and downturn	2.55	
Test statistic of difference of medians upturn and downturn	1.74	

1. The upturn and downturn of the business cycle is determined according to the coincident indicator

[14] the average market value of bidder in real terms in December 1996 prices is £470 m

The difference however in the announcement returns between upturns and downturns we document here may be caused by differences in the bidders or the targets characteristics across the upturn and the downturn of the business cycle. The market reaction to the announcement of a takeover bid has been found to be affected by a large number of factors such as the growth potentials of targets and bidders. The market reaction should be less negative if the benefits for the bidder that arise from the proposal are higher. A large number of synergistic gains can arise from the takeover. The gains that result from a takeover may be higher during the phase of an expansion and so the least negative price reaction during the upturn may indicate the higher profitability of the takeover and not necessarily that during the upturn an equity financed bid is less likely to be driven by overvaluation exploitation.

In order to be sure that the lower adverse selection costs that we find during the upturn of the cycle for bids that are financed with equity are not driven by differences in targets' or bidders' characteristics, we regress the announcement day abnormal returns with a number of bidders and targets' characteristics as well as business cycle variables. It is well documented in the literature that the market reaction to the announcement of a takeover bid and the impact on the bidders' share price is determined by how the market views the potential benefits that could arise from the takeover. Most noticeable, if the growth opportunities of the target are high, the expected profits from the takeover for the bidder will be high. Bidders with high market to book values and high q ratios are considered to be glamorous stocks. These stocks have usually experienced increasing share prices in the recent past. Investors may overpay for firms with high market to book value. If firms with high market to book values are overvalued then these firm may have the incentive to use equity to finance the bid. If bidders use equity when they are overvalued then the market to book value and other measures of growth opportunities must be negatively related with the announcement period returns. Firms with high pre-announcement increases are more likely to be overvalued relative to firms with small pre-announcement price run up. If firms that make equity financed bids are overvalued then bidders with high price run ups in the pre-bid period must have more adverse price reactions.

Apart from the growth opportunities, the size of the bidder and the target has implications for the potential benefits for the bidder. On the cases where the bidder is a large company the acquisition of a small company is expected to make a smaller impact than in the cases where the bidder is a medium or a small capitalisation firm. The size of the target also has significant effects on the wealth gains for the bidder. The acquisition of larger companies is more problematic than the acquisition of young and usually high growth companies. Large companies have larger management teams and the co-operation after the bid between the two firms is more difficult than the cases when the target is a small firm with less personnel. The announcement day returns for the bidder are also affected by the outcome of the bid. Even though the exact outcome is not known at the time of the bid, the market has an idea of what are the possibilities of the success of the bid. Successful bids indicate good planning and effective management team and are expected to have higher returns relative to unsuccessful bids. Other factors may well affect the market reaction on the announcement of the bid such as if the management is hostile or not to the bid, whether the bidder has a toehold in the target or if the bidder and the target are in the same industry or not. We were unable however to find data on these issues which create limitations in our study.

In table 7.5 we present the results of the regressions of the announcement day abnormal returns of bids that used equity to finance the bid against various characteristics of the bidder and the target and two dummy variables for the business cycle. The type of the regressions is weighted least squares where the weights are the inverse of the market model residuals estimated in the period -260 to -40 before the announcement of the bid.[15] The purpose of these regressions is not to find what factors affect the market reaction on the announcement of the takeover but to specifically test whether announcement day returns for equity financed takeover bids are higher during the upturn of the business cycle after allowing for the effect of as many bidders' and targets' characteristics.

[15] We checked that no firm has extraordinarily large weight in the regressions. No firm has a weight higher than 3.65%

In regressions 1 to 4 we use only bidders and target characteristics as independent variables with no proxies for the business cycle. We find that the higher the growth opportunities of the bidder, the more negative the market reaction on the announcement of the bid is. We used the market to book value, the PE ratio and the EPS as proxies for growth opportunities and the profitability of the bidder. All had negative and significant coefficients. Firms that have high Market to book values and PE ratios are regarded as glamorous stocks and have usually experienced recent increases in their prices. The negative coefficient is consistent with the argument that the use of equity by these overvalued glamorous stocks is an attempt to exploit overvaluation. We also find negative coefficients for the 3 month cumulative bidder abnormal return indicating that bidders with high price run up to the announcement of the bid have more negative returns on the announcement of the bid. Again that indicates that bidders with more overvalued shares have more adverse price reactions which indicates market fears that the choice of equity is driven by overvaluation exploitation.

We also find that the growth opportunities of the target , the market to book value, have a significant effect on the wealth gains for the bidders. Targets with high growth potential positively affect the returns for the bidder. To the contrary however, larger targets negatively affect the wealth gains for the bidder indicating that the takeover bids for large companies do not increase bidders' shareholders wealth. We do not find however that the size of the bidder affects the returns.

In regressions 5 to 7 we use add the first dummy that takes the value of 1 if the bid takes place during the upturn of the cycle and 0 otherwise. The coefficient of the dummy is positive and significant without any significant changes in the coefficients and the test statistics of the other variables.

In regressions 8 we use the second dummy that takes the value of 1 if the bid takes place during the second half of the expansion and 0 otherwise. The coefficients of this dummy is also positive and highly significant showing that during the second half of the expansion bidders that use equity to finance the bid face less negative announcement returns relative to all other stages of the cycle.

Even when we use the dummy variables for the outcome of the bid (successful or not) in regressions 9 and 10 and whether the bid was multiple or not ,regression 11, the coefficients of the dummy for the business cycle is positive and significant. Consistent with other studies we find that the successful bids have a positive impact on the bidders returns and multiple bids harm bidders shareholders' value.

In regressions 12 and 13 we use another independent variable, the relative size of the target over the bidder. In line with previous studies we find a positive coefficient for the relative size of the target with no qualitative changes in the coefficients of the remaining variables. This last result lead us to argue that the drop on the announcement of equity financed bids is not caused by the transfer of wealth from shareholders to bond holders or the price pressure theory. As we have argued earlier in this chapter, the debt co-insurance and price pressure theory predict a negative relation between the relative size of the acquisition and the magnitude of the drop on the announcement of the equity finance bid. Such a relation however is not present in our sample. When the target firm is large relative to the bidder, the market reacts more positively than when the target is small relative to the bidder.

Our results support our argument that a takeover bid that is financed with equity is accompanied with higher announcement day returns when the announcement takes place during the expansion phase of the business cycle. The slope coefficients for the DUMMY 1 that takes the value of 1 if the announcement takes place during the expansion and zero otherwise is positive and statistically significant. The coefficients for the DUMMY 2 that takes the value of 1 if the bid is announced during the second half of the expansion and zero otherwise is positive with high significance as well. So, the evidence for the takeover bids that are financed with equity are similar with our findings for the rights issues. During the expansion phase of the business cycle, an announcement of a takeover bid financed with equity is associated with lower adverse selection costs. Therefore we reject the null hypothesis in favour of the alternative.

Of course as we said earlier many more factors can affect the market reaction to the announcement of a takeover bid. Since we have no data about these factors we recognise that the current regression analysis is limited but indicative that the announcement period returns of equity financed bids are accompanied by less negative price reaction when the announcements are made during the upturn of the business cycle.

TABLE 7.5: WEIGHTED LEAST SQUARES REGRESSION ANALYSIS OF ANNOUNCEMENT PERIOD ABNORMAL RETURNS OF TAKEOVER BIDS FINANCED WITH EQUITY

The regressions we run had the following format:
Announcement day returns = Constant + (*Market to Book value of Bidder* i) + (*PE of Bidder* i) + (*EPS of Bidder* i) + (*Market value of Bidder* i) + (*3 month Cumulative Bidder return*) + (+ (*DUMMY 1*) + (*Dummy* 2) + (*Market to Book value of Target*) + (*Market Value of Target*) + (Succeed) + (Multiple) +(relative size of target)

	Constant	Market to Book value of Bidder	PE of Bidder	EPS of Bidder	Market value of Bidder	3 month Cumulative Bidder return	Dummy 1 (1 if expansion, 0 otherwise	Dummy 2 (1 if second half of expansion zero otherwise)	Market to Book value of Target	Market Value of Target	Succeed	Multiple	Relative size of target over bidder	N	R^2
1	0.0016 (1.39)	-0.0017 (-4.80)			-0.0016 (-0.94)	-0.0032 (-1.85)								432	5.6%
2	-0.021 (-5.78)		-0.0037 (-6.96)						0.0062 (3.52)	-0.0041 (-3.67)				365	13.3%
3	-0.0044 (-3.00)				-0.0026 (-1.19)	-0.054 (-2.45)								396	2.7%
4	0.0059 (2.45)			-0.0655 (-5.37)		-0.044 (-2.03)			0.075 (5.43)	-0.0024 (-2.2)				393	10.6%
5	-0.011 (-6.38)	-0.0028 (-6.3)					0.01286 (4.18)		0.0015 (7.34)	-0.0353 (-3.37)				373	22.9%
6	-0.022 (-6.38)		-0.00018 (-2.14)				0.0133 (2.90)		0.00096 (4.57)	-0.043 (-3.93)				365	15.1%
7	-0.00135 (-2.93)			-0.032 (-2.29)			0.0167 (5.01)		0.00082 (5.91)	-0.035 (-3.32)				393	15.1%
8	-0.016 (-4.64)		-0.00016 (-1.42)					0.028 (5.33)	0.0010 (5.53)	-0.047 (-4.45)				365	19.4%
9	-0.04 (-6.2)			-0.00015 (-1.88)			0.0114 (2.50)		0.0008 (3.80)	-0.038 (-3.57)	0.0207 (3.19)			365	17.2%
10	-0.020 (-2.95)	-0.0026 (-5.47)					0.012 (3.90;		0.00138 (6.32)	-0.034 (-3.25)	0.009 (1.49)			373	23.1%
11	-0.011 (-2.40)			-0.033 (-2.42)			0.0147 (4.41)		0.00069 (2.99)	-0.032 (-3.03)		-0.027 (-3.82)		389	18.6%
12	-0.0163 (-4.44)	-0.0029 (-6.4)					0.0078 (2.33)		0.0016 (8.32)				0.0029 (2.06)	373	21.4%
13	-0.009 (-4.008)	-0.032 (-7.70)							0.0014 (8.02)				0.0044 (3.31)	373	20.4%

The type of the regression is Weighted Least Squares of the 3-day abnormal announcement day returns where the weights are the market model residuals estimated from a period -260 to -40 trading days prior to the announcement of the bid. DUMMY 1 takes the value of 1 if the month is classified as Upturn of the business cycle and 0 if the month is classified as downturn of the business cycle. DUMMY2 takes the value of 1 if the month is during the second half of the expansion and zero otherwise. All firms specific variables for the bidder and target are measured 5 days prior to the announcement of the bid. Succeed takes the value of 1 if the bid was successful and 0 if not. Multiple takes the value of 1 if the bid was a multiple and zero otherwise. Relative size is the market value of the target over the market value of the bidder 3 MONTH CUMULATIVE BIDDER RETURNS is the 3 month cumulative return of the bidder in the 3 months prior to the month of the announcement of the bid. A bid is classified as MULTIPLE if the target has received a bid from other bidders as well..

Finding a strong relation between business conditions and takeover activity and adverse selection costs does not automatically indicate that the higher takeover activity we find during the upturn of the cycle is caused by the reduction of adverse selection costs. To support the argument that adverse selection costs have a significant effect on the volume of takeover bids that are financed with equity we need to make a regression analysis of the equity financed takeover volume and see if the average announcement period returns of the previous period have an effect on the takeover activity as we did for IPOs and SEOs

Therefore, the next hypothesis we test investigates whether the magnitude of the announcement period abnormal returns of bids that are financed with equity of the previous quarter has an effect on the volume of equity financed takeover bids.

The null and alternative hypothesis we test is the following.

Ho: The volume of equity financed bids is not related with the average announcement period abnormal returns of equity financed takeover bid of the previous quarter.

He: The volume of equity financed bids is positively and significantly related with the average announcement period abnormal returns of equity financed takeover bid of the previous quarter.

We seek to reject he null hypothesis in favour of the alternative one. If more firms use equity to pay for the takeover bids when announcement period returns are higher we will reject the null hypothesis in favour of the alternative one.

In order to see if there is relation between equity financed takeover volume and the announcement period abnormal returns we run monthly time series regression where the dependent variable is the percentage of equity financed bids over all number of takeover bids. As an independent variable, among others, we use the average announcement period abnormal returns of the previous quarter. If the coefficients of the average announcement period returns of the previous quarter are positive and statistically significant then we will reject the null hypothesis in favour of the alternative one.

7.5. Regression Analysis of the Takeover Bids Financed with Equity

This section investigates the determinants of the equity financing choice and especially wants to see what is the effect of economic conditions and the magnitude of the adverse selection costs on the volume of equity financed bids. As we saw in the introduction, the motives that dictate the method of payment in takeovers are numerous. Martin (1996) conducted the most extensive study on the motives for the method of payment for US bids. He tests how various factors affect the choice of payment. He concludes that the mode of the acquisition and the investment opportunities faced by the bidder are the most important. Tender offers are cash financed and friendly bids are equity financed. Bidders with high growth potentials are more likely to use equity. Bidders with high institutional shareholdings and blockholdings are more likely to use equity while firms with high cash balances are more likely to use cash.

The story however that Martin (1996) does not test is the effect that the magnitude of adverse selection costs have on the equity financed takeover volume. Choe, Masulis and Nanda (1993) argue that more firms make a SEO when the adverse selection costs that they face are low. Bidders that use equity also face significant adverse selection costs which impose indirect costs to the takeover bid. No study has previously investigated the significance of these costs on the timing of equity financed takeover bids. If these costs are important then the proportion of equity financed takeover bids will decrease when these costs are high.

In table 7.6 we present the results of the regression analysis where the dependent variable is the percentage of the number of takeover bids that are financed with equity over the total number of takeover bids per month. The lack of adequate information about the exact value of the acquisitions and how much is the value of the acquisition that is financed with equity does not enable us to use the proportion of the total amount of the takeover activity that is financed with equity. In a lot of cases, the target firm's shareholders are offered the choice between cash or equity but we do not know how many preferred the cash and how many preferred the equity. In addition, there are some months with low activity and the lack of data on this months may distort the regression results. For example there is a month where out of the 3 bids that took place 1 was financed with equity and 2 were financed with cash. There is information about the value of the acquisition for the 2 cases that were financed with cash but not for the value of the acquisition that is financed with equity. Therefore, the lack of data does not enable us to use as an independent variable the proportion of the values of the acquisitions that were financed with equity.

The monthly distribution of the proportion of equity financed takeover bids over all takeover bids from January 1985 to December 1995 is normally distributed with a Jarque-Bera test statistic of 1.84 which means that we can reject the hypothesis of not normality at very high levels. As independent variables we use a number of macroeconomic factors. Interest rates are represented by the monthly change rate of the 3-month treasury bill. As a measure of the level of the stock market we use the 60 day cumulative returns of the FT All Share. We also use a number of economic indicators to see if the improvement in business conditions cause an increase in takeover bids that are financed with equity. As with the regressions for IPOs and SEOs, two dummy variables are also used. The first dummy (DUMMY 1) takes the value of 1 if the month is classified as HOT (Upturn of the business cycle) and 0 if the month is classified as COLD (downturn of the business cycle). The second dummy (DUMMY2) takes the value of 1 if the month is during the second half of the upturn and zero otherwise. Last but not least we use one more independent variable to see the effect that the adverse selection costs have on the equity financed takeover activity. This variable is the average announcement period abnormal returns of all equity financed bids that were announced in the previous quarter. If the adverse selection costs dictate the volume of equity financed takeover activity then the coefficients of the adverse selection costs should be positive and significant.

The Cochrane-Orcutt method is used to correct for the serial correlation of the errors. The choice of econometric method did not altered the significance of our findings. Ordinary Least Squares regressions and TOBIT regressions were also used (not reported) without producing results qualitatively different to the ones we report here. T- Statistics are given in parentheses below the coefficients.

Interest rates have an insignificant effect on the proportion of takeover bids that are financed with equity. Both short term and long term interest rates have insignificant coefficients. The attractiveness of equity as a method of payment increases when the stock market rises and that can be seen from the positive and significant coefficients of the 60 day market return. An increase in the market (FTA) causes more firms to choose equity as a method of payment. That may be caused because a rise in the market or a rise in the share price of the bidder may reduce the cost of the takeover.

Consistent with our earlier findings, the coefficients of the first dummy that takes the value of 1 if the month is during the upturn of the business cycle is significant indicating that the percentage of equity financed bids higher in the upturn relative to the downturn of the cycle. The percentage of bidders that use equity during the upturn is 6% higher than the percentage of bidders that use equity during the downturn. The coefficients of the first dummy are significant at 10% level of significance even though this dummy in the OLS and TOBIT regressions had higher test statistics which ranged from 1.95 to 2.3 and from 1.96 to 2.19 in the OLS and TOBIT regressions respectively. The statistical insignificance of the coefficients for the second dummy shows that equity financed takeover activity is not concentrated in the second half of the expansion but it is high through out the whole duration of the upturn.

Contrary to our findings for the rights issues, we do not find that the volume of equity financed bids is affected by the magnitude of the adverse selection costs. The slope coefficients for the average announcement day returns of the previous term in regressions 5 and 6 were positive , indicating that when the announcement day returns of takeover bids financed with equity in the previous quarter are high, takeover activity in that month will also be high. The coefficients however are not statistically significant with test statistics lower than 1. Changing the length of time that we average the average announcement period abnormal returns from 3 months to 6 months and 1 year did not produce significant coefficients. Therefore, we can not argue that the proportion of equity takeover financed bids over all takeover bids increases when the adverse selection costs associated with equity financed takeover bids decrease.

TABLE 7.6: MONTHLY TIME SERIES REGRESSION ANALYSIS OF PROPORTION OF TAKEOVER BIDS FINANCED WITH EQUITY OVER ALL TAKEOVER BIDS ANNOUNCED FROM 1985 TO 1995

The regressions we run had the following format:
(Proportion of takeover bids financed with equity) t= Constant + (Interest Rate *change)t +(change in long term government bonds)t+ (Market Run UP 60 days)t + (DUMMY 1)t +(DUMMY 2)t + (average abnormal announcement returns during previous term)t*

	Constant	Change in 3 MONTH T-BILL	Change in LONG TERM GOVERNMENT BONDS	Market Run UP 60 days of FTA index	DUMMY 1 (1 if expansion, 0 otherwise)	DUMMY 2 (1 if second half of expansion zero otherwise)	ADVERSE SELECTION COSTS (average abnormal announcement returns during previous term)	R^2
1	0.27 (10.25)	0.0255 (0.17)		0.402 (2.07)	0.067 (1.78)			3.5%
2	0.307 (12.83)	0.0134 (0.078)		0.4058 (2.02)		0.0123 (0.27)		0.8%
3	0.277 (10.33)		-0.59 (-0.179)	0.3968 (2.01)	0.067 (1.79)			3.6%
4	0.307 (12.88)		-0.049 (-0.14)	0.4021 (1.97)		0.0138 ((0.30)		0.9%
5	0.288 (9.12)	0.123 (0.69)		0.3668 (1.82)	0.0632 (1.66)		0.497 (0.72)	3.01%
6	0.323 (11.01)	0.005 (0.03)		0.352 (1.68)		0.005 (0.01)	0.68 (0.95)	0.6%

The Cohrane-Orcutt method is used to adjust for the serial correlation of the errors. The dependent variable is the Proportion of takeover bids financed with equity over all takeover bids announced in that month. Interest rates is the monthly change of the 3 month treasury bill and long term government bonds measured over three months prior to the beginning of the month . MARKET RUN UP is the 60 day cumulative returns of the FT All Share prior to the beginning of the month . DUMMY 1 takes the value of 1 if the month is classified as HOT (Upturn of the business cycle) and 0 if the month is classified as COLD (downturn of the business cycle). DUMMY2 takes the value of 1 if the month is during the second half of the expansion and zero otherwise. ADVERSE SELECTION COSTS is the average abnormal announcement period returns of all takeover bids financed with equity and were announced in the previous 3 months.

Unlike Rights issues we do not find that the magnitude of adverse selection costs has any effect on the timing of takeover bids that are financed with equity. Managers may look at other factor to determine the choice of payment for the takeover bid and how much the market value of the bidder will drop when the equity bid is made public is not among the things that they take into account. We reconfirm our earlier findings however that economic conditions have an impact on the choice of the method of payment. 6% more firms use equity to finance a takeover bid during the upturn of the business cycle when interest rates and market returns are taken into account, a percentage which is significant at 10% level using two tail tests.

7.6 Post-bid performance of takeover bidders.

Several studies that have looked at the post-announcement performance of bidders have found that the takeover bid damages the bidders' shareholders. Bidders underperform after the bid takes place. According to Frank, Harris and Titman (1991) however the results are sensitive to the choice of benchmark in the calculation of abnormal long run performances. Different methodologies yield different results. For a literature review on that issue see section 2.4.3.

Even though many reasons could be responsible for such a poor performance we can gain more insights on the reasons for the underperformance by looking at the post-bid performance of bidders according to the method of payment. The evidence suggest that bidders that use equity to finance the bid underperform while bidders that use cash do not underperform. The choice of payment can reveal to the market the management's view about the intrinsic value of the firm at the time of the announcement of the bid. Firms that their current share price is higher than its intrinsic value would be better off to use equity to finance the deal, ceteris paribus. Firms that are undervalued would look at other options instead such as cash or loans since the use of equity for them would not decrease the cost of the acquisition.

The reasons behind the poor long run performance of equity financed takeover bids remain elusive. The literature has not been able to provide a definite answer. Especially since some characteristics of equity financed bids are not the same as with the characteristics of cash bids.

If firms that make a takeover bid financed with equity underperform and those that use cash do not underperform we could argue that the reason behind the underperformance is that equity financed bids are driven by overvaluation exploitation. The method of payment might reveal to investors the true value of the firm. The market knows that managers might be tempted to use equity to finance a bid when the shares are overvalued and so investors regard bidders that use equity to finance the bid as overvalued and they mark down their share prices. Bidders that use cash are considered to be undervalued and therefore investors increase their valuations of the company. The evidence of a significant underperformance of bidders that use equity is consistent with that explanation but does not automatically indicate that the only reason behind the poor long run performance of equity takeovers is that managers deliberately time the equity financed bid when shares are overvalued. Other factors may be responsible for the poor long run performance. To argue that bidders use equity to finance a bid solely because their shares are overvalued we would have to find that during periods of heavy equity financed takeover activity bidders must be more overvalued. On the other hand, during periods when equity financed takeover activity is scarce, bidders must be undervalued and therefore they should resort to other methods of payment. If the magnitude of bidders' overvaluation differs according to the intensity of takeover activity, then bidders that were more overvalued would underperform and bidders that were not overvalued should not underperform. If the force behind the increase in equity financed takeover bids is overvaluation exploitation, then bidders that make the bid in heavy volume periods must have worst post-bid performances than bidders that time the equity financed bid in light volume periods.

The investigation however of long run performances is problematic and full of computational problems. Recently, Barber an Lyon (1997) tested various methodologies on how to calculate long run performances and their robustness. They find that the use of benchmark portfolios such as market indexes and size or market to book deciles creates bias in the results and suggest that only Buy and Hold returns matched by firms with similar market to book or market value is the only method that yields unbiased results. For a more detail analysis of that issue see section 4.3. Following their recommendations we use industry and market to book matched returns and industry and market value matched returns to calculate the abnormal long run performances. (For more details on the issue of calculation of long run performances see also at section 4.3)

In table 7.7 we present our findings of the post-announcement performance of takeover bidders. As a measure of performance we use the Buy and Hold returns first without any adjustments, second matched by industry and market to book value and third matched by industry and market value. These returns represent the return to an investor that purchased the shares of the bidder at the end of month -1 relative to the announcement of the bid. The same results are in figure 7.4.

We find that by the end of year 1, bidders offer a 12.99% buy and hold return (no adjustments) and that the return increases to 19.21% by the end of year 2. The buy and hold return increases further by the end of year 3 to 24.95% and remain at this level up until year 5. By the end of the month 60 after the announcement of the takeover proposal, the average buy and hold return to an investor that purchased the shares of the bidder at the end of month -1 relative to the announcement of the bid is 25.18%. Throughout the 5 year period, the buy and hold returns are highly significantly different from zero as the test statistic in the bottom row of panel A indicate. They range from 5.82 to 8.56.

However, in any calculation of log run performances a proper adjustment has to be made to reveal the true picture. When we use the buy and hold returns matched by industry and market to book value, we find that bidders have negative buy and hold returns but these returns are not significantly different from zero until month 10 onwards and up until month 47 (significantly negative buy and hold returns at least at 10% level one-tail). By the end of year 1, the buy and hold return is -2.78% with a test statistic of -1.34 just marginally significant at 10% one tail test. By the end of year 2 the average buy and hold return decreases to -5.94% and drops further by the end of year 3 to -7.60% (both have test statistics of around -1.70). From that month onwards buy and hold returns start to increase and remain insignificantly different from zero to reach a 5 year buy and hold return of -3.39% without however being significantly different from zero.

Similar results are found for the buy and hold returns that are matched by industry and market value. The bidders underperform after the announcement but this underperformance is significant only in the months 20 to 37. By the end of year 1 the average buy and hold return matched by industry and market value is -1.81% not significant from zero with a test statistic of -0.89. By the end of year 2 the average buy and hold return is a significantly negative -5.03% with a test statistic of -1.61 and decreases to -7.02% by the end of year 3 with a test statistic of -1.68. Buy and hold returns matched by industry and market value start to increase after that point to reach an average buy and hold return by the end of year 5 of -3.92 which is not significant from zero.

In summary, we find that bidders offer slightly inferior returns to their shareholders relative to firms in the same industry and similar market to book value or similar market values. This underperformance however is not significant until the end of year 2 and reaches the most negative point by the end of year 3. After that point, bidders' returns start to increase again. Our evidence are in line with the literature findings that bidders underperform after the issue. The underperformance however is modest, only around 7% at the most negative point by the end of year 3 and is not highly significant.

TABLE 7.7:POST- BID PERFORMANCE OF BIDDERS

Month from the announcement	12	24	36	48	59
PANEL A (NO ADJUSTEMENTS)					
Post-Bid performance of bidder	12.99%	19.21%	24.95%	27.04%	25.18%
Number of observations	795	793	781	744	719
Test statistic of difference from zero	*8.56*	*5.70*	*6.72*	*5.82*	*6.28*
PANEL B MATCHED BY INDUSTRY AND MARKET TO BOOK VALUE					
Post -Bid performance of bidders **Adjusted for Industry and Market to Book Value**	-2.78%	-5.94%	-7.60%	-5.46%	-3.39%
Number of observations	738	733	727	689	653
Test statistic of difference from zero	*-1.34*	*-1.72*	*-1.76*	*-1.10*	*-0.68*
PANEL C MATCHED BY INDUSTRY AND MARKET VALUE					
Post-Bid performance of bidder **Adjusted for Industry and Market Value**	-1.81%	-5.03%	-7.02%	-2.60%	-3.92%
Number of observations	693	690	687	655	634
Test statistic of difference from zero	*-0.89*	*-1.61*	*-1.68*	*-0.53*	*-0.81*

We may have found that takeover bidders underperform in the long run after the announcement but we report significant variations in the post-announcement performance of bidders according to the method of financing the deal. In table 7.8 we present the post-announcement performance of bidders partitioned by the method of payment. Highlighting the main findings we can say that cash bids significantly outperform the equity bids.

The 3 year buy and hold performance of bidders that used only cash to finance the deal is +51.67%, significantly different from zero with a test statistic of 3.53 while the bidders that use only equity have a 3 year return of 18.25% also significantly positive with a test statistic of 2.39. The difference in the returns between the two groups is 33.42% which is significantly different from zero with a test statistic of 2.36. Even when we compare the returns of the bidders that use cash in whole or in part to finance the deal and those that use equity in whole or in part, the equity bidders have significant worst performances than cash bidders. The bidders that used some form of equity in the bid had a 3 year buy and hold performance of 15.99% while the bidders that use some cash in the bid had a 3 year buy and hold performance of 29.62% a difference of 13.63% with a test statistic of 1.83 (results on the buy and hold performance of cash Vs equity bids are also plotted in figure 7.5)

TABLE 7.8: BUY AND HOLD POST- BID PERFORMANCE OF BIDDERS PARTITIONED BY THE METHOD OF PAYMENT

PANEL A
BUY AND HOLD WITH NO ADJUSTMENTS

MONTH FROM THE ANNOUNCEMENT	12	24	36	48	60
ONLY CASH BIDS	15.00%	44.14%	51.67%	61.04%	60.24%
test statistic of difference from zero	*3.42*	*2.42*	*3.53*	*3.67*	*4.64*
ONLY EQUITY	11.30%	11.30%	18.25%	22.34%	7.82%
test statistic of difference from zero	*3.22*	*2.58*	*2.39*	*1.96*	*1.02*
SOME FORM OF CASH	15.28%	25.57%	29.62%	32.45%	32.18%
test statistic of difference from zero	*7.27*	*4.39*	*5.66*	*5.09*	*6.21*
SOME FORM OF EQUITY	12.92%	13.21%	15.99%	15.76%	11.45%
test statistic of difference from zero	*6.38*	*4.83*	*4.18*	*3.05*	*2.63*
test statistic of difference only cash versus only equity	*0.43*	*1.67*	*2.36*	*2.60*	*3.56*
test statistic of difference between some form of cash versus some form of equity	*0.53*	*1.75*	*1.83*	*1.84*	*2.73*
AVERAGE BUY AND HOLD RETURN OF ALL BIDDERS	*12.99%*	*19.21%*	*24.95%*	*27.04%*	*25.18%*

When we use the returns that are adjusted for industry and market to book value (panel B of table 7.8) we also find significant differences in the post-bid performance of equity and cash financed bids. The 3 year buy and hold performance of bidders matched by industry and market to book value that used only cash to finance the deal is +26.60% significantly different from zero with a test statistic of 1.73. (results for the industry/ market to book value adjusted performance partitioned by the method of payment are also plotted in figure 7.6). Bidders that use only equity to finance the deal underperform by the end of year 3 by 30.11%. The underperformance of equity bids starts to be significant from month 7 and by the end of year 1 it is -11.65%. By the end of year 2, equity financed bids underperformance has increased to -19.30% and reached -30.11% by the end of year 3. In the 4th and 5th years after the bid, equity financed bidders' performance does not deteriorate further and it slightly improves to a 4 year buy and hold return of -25.83% and -28.61% by the end of year 5. The difference in the post-bid performance between bidders that finance the deal only with cash and those that financed the deal only with equity by the end of year 1 is 17.75% in favour of cash bids and increases to 33.44% and 56.71% by the end of year 2 and 3 respectively and remains at the area of 60% for the 4th and 5th years. This difference is significant with test statistics that range between 2.04 for the difference at the end of year 1 to 2.73 for the difference in the end of year 3.

The underperformance of equity bids remains even when we look at the bids that used equity at least in some part to finance the bid. By the end of year 1, these bidders underperformed by 6.57% and by 12.45% by the end of year 2. The lowest point was once again reached by the end of year 3 when these type of bidders have a 3 year buy and hold return of -17.64% with a test statistic of -3.49. As with the only equity bidders, by the 4th and 5th years after the bid, their performance slightly improves to -13.13% and -10.63% respectively but still remains significant negative.

When we compared the bids that used cash in whole or at least in some part of the financing package against the bids that used equity in whole or in part of the proposed deal, the difference in the post-announcement buy and hold returns is smaller. By the end of year 1 the difference is 7.24% in favour of the cash bids and it increases to 14.77% by the end of year 2. The difference reaches the maximum in year 3 with cash bids outperforming equity bids by 20.86%. By the end of year 4 and 5 the difference is 19.64% and 16.32% respectively. Even though the differences are smaller, they remained significantly different from zero with test statistic ranging between 1.62 for the one year to 2.62 by the end of year 3.

TABLE 7.8
BUY AND HOLD POST- BID PERFORMANCE
OF BIDDERS PARTITIONED BY THE METHOD OF PAYMENT

PANEL B
BUY AND HOLD MATCHED BY INDUSTRY AND MARKET TO BOOK VALUE

MONTH FROM THE ANNOUNCEMENT	12	24	36	48	60
ONLY CASH BIDS	6.10%	14.14%	26.60%	34.43%	29.44%
test statistic of difference from zero	*1.12*	*1.30*	*1.73*	*2.01*	*1.95*
ONLY EQUITY	-11.65%	-19.30%	-30.11%	-25.83%	-28.61%
test statistic of difference from zero	*-2.23*	*-2.88*	*-3.38*	*-2.23*	*-2.47*
SOME FORM OF CASH	0.67%	2.32%	3.22%	6.51%	5.69%
test statistic of difference from zero	*0.23*	*0.43*	*0.51*	*0.95*	*0.84*
SOME FORM OF EQUITY	-6.57%	-12.45%	-17.64%	-13.13%	-10.63%
test statistic of difference from zero	*-2.25*	*-3.07*	*-3.49*	*-2.1*	*-1.747*
test statistic of difference only cash versus only equity	*2.04*	*2.28*	*2.73*	*2.61*	*2.46*
test statistic of difference between some form of cash versus some form of equity	*1.62*	*2.10*	*2.62*	*2.22*	*1.94*
AVERAGE BUY AND HOLD MATCHED BY INDUSTRY AND MARKET TO BOOK VALUE OF ALL BIDDERS	*-2.78%*	*-5.94%*	*-7.60%*	*-5.46%*	*-3.39%*

In panel C of table 7.8 we report the post-bid performance of bidders matched by industry and market value. (the results are plotted in figure 7.7).As with the previous measures of performance we find significant differences between equity and cash bids. Those that used only cash outperform by 11.78% at the end of year 3 while only equity financed bidders underperform by 20.12% at the same period. The difference in the performance between the two groups was 12.47% by the end of year 1 and 27.8% by the end of year 2. The spread in the performances between only cash and only equity increased to 31.90% and 36.68% by the end of year 3 and 4 to reach 53.99% by the end of year 5. The difference in the performance between the two groups of bidders was significant apart from the first year. The spread in the post-bid performance between cash and equity financed bids was smaller when we broadened the two groups to include those bids that use cash or equity at least in part but was also significantly different from zero with a test statistic of 1.36 and 1.8 by the end of year 1 and 5 respectively. The spread was 5.27% and 13.26% by the end of year 1 and 2 to increase to 21.23% in year 3. In the 4th year it dropped to 11.27% only to increase again to 16.28% by the end of year 5. The difference in the post-bid performance between equity and cash bids is significant with test statistics above 1.36

TABLE 7.8
BUY AND HOLD POST- BID PERFORMANCE
OF BIDDERS PARTITIONED BY THE METHOD OF PAYMENT

PANEL C
BUY AND HOLD MATCHED BY INDUSTRY AND MARKET VALUE

MONTH FROM THE ANNOUNCEMENT	12	24	36	48	59
ONLY CASH BIDS	3.00%	10.45%	11.78%	22.94%	27.20%
test statistic of difference from zero	*0.58*	*1.15*	*1.31*	*2.15*	*1.91*
ONLY EQUITY	-9.47%	-17.35%	-20.12%	-13.74%	-26.79%
test statistic of difference from zero	*-1.64*	*-2.00*	*-1.64*	*-0.91*	*-2.73*
SOME FORM OF CASH	1.59%	-2.21%	-5.56%	0.27%	-1.46%
test statistic of difference from zero	*0.66*	*-0.56*	*-1.28*	*0.05*	*-0.25*
SOME FORM OF EQUITY	-3.68	-11.05%	-15.67%	-11.00%	-14.82%
test statistic of difference from zero	*-1.37*	*-2.60*	*-2.85*	*-1.65*	*-2.62*
test statistic of difference only cash versus only equity	*1.13*	*2.14*	*2.59*	*2.69*	*2.74*
test statistic of difference between some form of cash versus some form of equity	*1.36*	*1.55*	*1.51*	*1.43*	*1.80*
AVERAGE BUY AND HOLD MATCHED BY INDUSTRY AND MARKET VALUE OF ALL BIDDERS	*-1.81%*	*-5.03%*	*-7.02%*	*-2.60%*	*-3.92%*

Overall, our evidence show that bidders that use equity in the financing package of the deal exhibit significant underperformance and their post announcement performance is significantly worst than the bidders that use cash to finance the deal. Even when we broaden the samples to include the bidders that use equity in part of the deal and not exclusively, the results remained similar. Even in this larger sample, equity bidders underperform and are doing significantly worst than those firms that use cash in whole or in part to finance the deal.

Our results are similar with the results of Frank ,Harris and Titman (1991) who find that cash bids outperform and equity bids underperform, even though they find that for some methodologies the positive returns for all cash bids are not different from zero.

The difference in the post-announcement performance of bidders between the cash and equity financed bids is puzzling. As we saw earlier, managers have the incentive to use overvalued shares to pay for the bid since overvalued shares will reduce the cost of the acquisition. Investors are not able to estimate the intrinsic value of the bidder with an accuracy such as managers can. Investors regard an equity financed bid as an attempt to exploit overvaluation and mark down the share price of the bidder on the announcement of an equity financed bid. The drop on the share price of the bidder however is around 1% and surely does not eliminate the whole overvaluation. Gradually as more information is revealed about the bidder investors may realise that the price of the bidder at the time of the bid was higher than its fundamental value and so they continuously mark down the share price of the bidder.

The big underperformance of equity financed bids might indicate that at the time of the bid announcement the share price of the bidder must have been high and that the bidder was overvalued. However if managers use overvalued shares to pay for these takeover deals that does not automatically indicate that equity financed bids are driven solely by overvaluation exploitation and that managers deliberately exploit target firms' shareholders. The fact that bidders share prices are high at the time of the bid may not necessarily dictate the method of payment and may not be the driving factor behind the variation in the number of equity financed deals across time.

If more managers deliberately time the takeover bids financed with equity around periods when the share price of the bidder is overvalued then we must find that those bidders should underperform as soon as the market realises that the true value of the stock is lower that its current value. In order to argue however that periods when the number of equity financed deals is higher are periods when shares are more overvalued than periods with small numbers of equity financed bids we have to find significant differences between the bidders post-announcement performance of heavy and light takeover volume periods.

The null and alternative hypothesis we test is the following.

Ho: The bidders that announce a takeover bid that is financed, in whole or in part, by equity in periods of heavy equity financed takeover volume periods have similar Post-announcement performances with bidders that announce a takeover bid that is financed with equity, in whole or in part, in periods of light equity financed takeover volume periods

He: The bidders that announce a takeover bid that is financed in whole or in part by equity in periods of heavy equity financed takeover volume periods have significantly worst Post-announcement performances relative to bidders that announce a takeover bid that is financed with equity in whole or in part in periods of light equity financed takeover volume periods

To support the story that equity financed takeover bids are driven by overvaluation exploitation we seek to reject the null hypothesis in favour of the alternative. To do so we compare the Post-announcement performances of bidders that announce a takeover bid, that is financed with equity in whole or in part, in periods of light volume with the Post-announcement performances of bidders that announce a takeover bid, that is financed with equity in whole or in part, in periods of heavy volume.

To classify heavy and light volume periods, we rank the 132 month of our sample between January 1985 to December 1995 according to the percentage of equity financed bids over all takeover bids. The 33 months (25% of the sample) with the highest percentages of equity financed bids are classified as Heavy volume periods (HOT) and the 33 months with lowest percentages of equity financed bids are classified as light volume periods (COLD). The remaining 66 months are classified as OTHER. The results of the Post bid performances of bidders of HOT and COLD periods are in table 7.9.

In panel A of table 7.9 we report the post-bid performance matched by industry and market to book value of bidders that used equity to finance the bid across HOT and COLD periods. The comparison of the post-announcement returns of HOT and COLD market bidders shows that HOT market bidders have insignificant differences in their performances with COLD market bidders up until month 20. In figure 7.8 we have plotted these performances. The HOT market bidders' performance is represented by the red line and COLD market bidders' performance is represented by the blue line. We see that after the announcement and up until month 20 the two lines move together. Both group of bidders underperform. After month 20, COLD market bidders exhibit higher buy and hold performances than HOT market bidders. By the end of year 3, HOT market bidders have a buy hold return of -27.07% while COLD market bidders have a return of 1.61%, significantly higher than HOT market bidders with a test statistic of 1.63. This 28.68% difference in return between HOT and COLD market bidders decreases in the fourth year to reach an insignificant spread of 16.98% in favour of COLD market bidders by the end of year 4 and becomes 13.92% by the end of year 5 which is also insignificant.

The number of COLD market bidders however is extremely small, only 30. Therefore we also compare the performance of HOT market bidders with the performance of bidders that made the announcement in all the remaining months which includes both the COLD and OTHER market bidders (green line in figure 7.8). Our findings suggest that HOT market bidders are worst performers relative to all other bidders. HOT market bidders underperform relative to all other bidders but the difference was not significant. Our findings on the post-announcement performance of HOT market bidders using the industry and market to book value adjusted buy and hold return indicate that HOT market bidders are not significantly worst performers than all other bidders.

In panel B of table 7.9 we use of the second measure of performance which is adjusted for <u>industry and market value</u>. The use of this measure of post-announcement performance indicates no difference whatsoever between the HOT and COLD market bidders. In figure 7.9 we can see that HOT market bidders (red line) have better performances than COLD market bidders (Blue line) in the period up to month 15. From that month and until the end of year 4, COLD market bidders perform better than HOT market bidders but the difference in the performance is not significantly different from zero. Comparing the HOT market bidders with all the remaining bidders(both COLD and OTHER green line in figure 7.9) produced insignificant differences in the performances of the two groups.

The use of Normal (with no adjustments)buy and hold returns also produced a similar picture with the results with the industry/ Market value adjusted returns (not reported). There is no significant differences between the HOT and COLD market bidders or all the remaining bidders.

The small difference in the results between the industry/market to book and industry/ market value adjusted performances used to calculate the post-bid performances may be driven by the method used to calculate the performances. In order to do the industry/ market to book and industry /market value matching, data about the market to book and market value had to be found. However, for some companies we did not find data about their market value at the month of the announcement and for some others we had no data for the market to book value. Therefore, the differences in the two measures may be due to the fact that each HOT and COLD market bidders group consists of different firms in the industry/market to book value and industry and market value performances.

Even if we use the industry and market to book adjusted returns that show some differences in the HOT and COLD market bidders performance, this difference starts from month 20. It is rather unconvincing to argue that for 20 month, investors did not realise that HOT market bidders are more overvalued than COLD market bidders and suddenly after 20 month investors found out. Beside that, the small number of firms in the COLD market sample, around 30, indicates that the average performance of this group may be driven by some outliers. Even though we did not identified extremely performing firms in the COLD market sample, even one firm can change the averages in this group.

TABLE 7.9: BUY AND HOLD POST- BID PERFORMANCE OF BIDDERS THAT USED EQUITY TO FINANCE THE BID ACROSS HOT AND COLD PERIODS[1]

MONTH FROM THE ANNOUNCEMENT OF THE BID	12	24	36	48	59
PANEL A ***INDUSTRY AND MARKET TO BOOK VALUE ADJUSTED***					
BUY AND HOLD POST-BID PERFORMANCE OF BIDDERS THAT MADE THE ANNOUNCEMENT IN **HOT** PERIODS	-10.09% (221)	-19.17% (220)	-27.07% (220)	-20.87% (212)	-12.03% (205)
test statistic of difference from zero	*-2.09*	*-2.94*	*-3.69*	*-2.52*	*-1.56*
BUY AND HOLD POST-BID PERFORMANCE OF BIDDERS THAT MADE THE ANNOUNCEMENT IN **OTHER** PERIODS	-01.08% (179)	-04.91% (178)	-09.19% (177)	-04.76% (163)	-11.03% (151)
test statistic of difference from zero	*-0.32*	*-0.98*	*-1.22*	*-0.44*	*-1.01*
BUY AND HOLD POST-BID PERFORMANCE OF BIDDERS THAT MADE THE ANNOUNCEMENT IN **COLD** PERIODS	-13.35% (30)	-07.87% (30)	01.61% (30)	-03.89% (30)	01.89% (28)
test statistic of difference from zero	*-1.50*	*-0.63*	*0.10*	*-0.23*	*0.10*
TEST STATISTIC OF DIFFERENCE BETWEEN HOT AND COLD	*0.32*	*-0.80*	*-1.63*	*-0.89*	*-0.69*
TEST STATISTIC OF DIFFERENCE BETWEEN HOT AND ALL REMAINING MONTH (OTHER AND COLD)	*-1.26*	*-1.15*	*-1.04*	*-0.87*	*-0.25*
PANEL B ***INDUSTRY AND MARKET VALUE ADJUSTED***					
BUY AND HOLD POST-BID PERFORMANCE OF BIDDERS THAT MADE THE ANNOUNCEMENT IN **HOT** PERIODS	-03.69% (214)	-11.65% (214)	-15.37% (214)	-07.74% (207)	-07.99% (205)
test statistic of difference from zero	*-0.82*	*-1.69*	*-1.73*	*-0.74*	*-1.04*
BUY AND HOLD POST-BID PERFORMANCE OF BIDDERS THAT MADE THE ANNOUNCEMENT IN **OTHER** PERIODS	-02.26% (167)	-10.96% (168)	-19.59% (168)	-16.15% (155)	-24.94% (145)
test statistic of difference from zero	*-0.67*	*-2.10*	*-2.84*	*-1.79*	*-2.70*
BUY AND HOLD POST-BID PERFORMANCE OF BIDDERS THAT MADE THE ANNOUNCEMENT IN **COLD** PERIODS	-10.72% (33)	-07.58% (33)	02.85% (32)	-07.12% (32)	-12.67% (31)
test statistic of difference from zero	*-1.39*	*-0.61*	*0.19*	*-0.50*	*-0.88*
TEST STATISTIC OF DIFFERENCE BETWEEN HOT AND COLD	*0.79*	*-0.29*	*-1.02*	*-0.03*	*0.29*
TEST STATISTIC OF DIFFERENCE BETWEEN HOT AND ALL REMAINING MONTH (OTHER AND COLD)	*-0.01*	*-0.15*	*0.06*	*0.52*	*1.33*

1. HOT months are the 33 months (25% of the sample) with the highest percentages of equity financed bids per month and COLD month are the 33 months with lowest percentages of equity financed bids. The remaining 66 month are classified as OTHER.

Our results of similar post-bid performance of bidders that finance the bid with equity and made the announcement in HEAVY and LIGHT volume periods, do not support the argument that takeover activity financed with equity is driven by overvaluation exploitation. Periods of heavy activity in terms of equity financed takeover bids are not periods when bidders are more overvalued than periods of low activity. The significant variations on the equity financed takeover activity across time are not driven by variations in the magnitude of overvaluation. The variation in investors sentiment do not seem to have a significant impact on the timing of equity financed takeover bids. Other factors must account for the clustering of equity financed takeover bids in certain periods of time.

The examination of the post-takeover performance of bidders that use equity to finance the bid and the fact that according to our results the equity financed takeover activity is not driven by overvaluation exploitation indicate that investors sentiment is not a major driving force of the variability of equity financed takeover activity. Therefore, we interpret this first negative sign and do not embark in a research effort about the impact of analysts' earnings overoptimism on the volume of equity financed takeover activity. Furthermore, the time length of the sample of equity financed takeover bids would be from 1988 to 1995 and the number of bids is only 482 compared with the 902 IPOs and the 1568 rights issues. Therefore, the size of the sample is greatly reduced and to make an investigation for an issue where the first signs and discouraging and the lack of data limits the significance of the research was seen to be unnecessary.

7.7 CONCLUSIONS

In this chapter we use equity financed takeover bids to gain insights about the timing of equity issues. This chapters first tests the effect that economic conditions have both on the volume of takeover bids and on the adverse selection costs associated with the announcement of takeover bids that are financed with equity. Takeover activity exhibits variations in its volume across time in the UK. The attractiveness of equity as a method of payment also varies over time and across the business cycle. More firms use equity to finance a takeover bid during the upturn of the business cycle.

The relation between adverse selection costs associated with the announcement of an equity financed takeover bid and the timing of equity financed takeover bids is also investigated. The announcement of a takeover bid is accompanied by significant negative returns for the bidder. There are significant variations however in the announcement period abnormal returns according to the method of payment. Proposals that use equity in whole or in part to finance a bid have significantly more negative announcement period returns than cash offers. We find evidence that the improvement in economic conditions has a significant effect on the announcement period returns foı equity financed bids. During the upturn of the business cycle , bidders that use equity to finance a deal have an average 1.1% higher announcement period return relative to the downturn of the business cycle We find however no significant relation between the magnitude of announcement period returns and the timing of takeover bids that are financed with equity. Periods when adverse selection costs are low are not periods when the percentage of equity financed takeover bids over all takeover bids increases significantly. Bidders do not care about these indirect adverse selection costs when they decide to use equity to finance a takeover proposal.

This chapter has also explored the post-announcement performance of bidders. We find that on average, bidders exhibit an underperformance of 7% in the third year after the announcement of the takeover. There are significant variations in the post-announcement performance according to the method of payment. Cash offers have significantly better performance than equity financed ones. Bidders that use cash outperform after the bid while bidders that use equity underperform. The difference in the post-announcement performance of equity and cash financed bids is large and significant. In theory we could argue that the underperformance of bidders that use equity as a method of payment is caused by the mark down of the share price of the bidder by investors who regard that an equity financed bid is driven by overvaluation exploitation.

We find no relation however between the intensity of equity financed takeover activity and the post-bid performance. Bidders that announce the equity financed takeover bid in heavy volume periods do not have worst performances relative to bidders that make the announcement in light volume periods showing us that the time series variations in the numbers of equity financed bids are not driven by overvaluation exploitation. Periods of heavy equity financed takeover activity are not periods when the bidders are more overvalued than periods of low equity financed bid activity.

Overall, we find evidence that the timing of equity financed equity bids is not related to adverse selection costs or overvaluation exploitation. Takeover bids that are financed with equity seem to have their own dynamics and other factors may influence their timing.

CHAPTER 8: FINANCIAL ANALYSTS EARNINGS FORECASTS AND THE TIMING OF INITIAL PUBLIC OFFERINGS

8.1. INTRODUCTION

According to Ritter (1991) and Loughran and Ritter (1995) variations in IPO and SEO activity arise from changes in investors' sentiment. Issuers take advantage of transitory windows of opportunity and issue equity near the peak of industry specific fads. They argue that investors pay high multiples of market to book or price earnings because they overestimate the net present value of future growth opportunities.

In chapter 5 we found evidence in favour of the sentiment timing of UK IPOs. Firms that went public in heavy volume periods have significant worst post-IPO performances than firms that went public in periods of Light IPO volume. That result indicates that the former group of IPOs have more overvalued offer prices than the latter one. Even though the evidence suggests that there are periods when investors are willing to pay higher prices for the new issues, no one is sure what makes investors overpay.

Rajan & Servaes (1998) find strong evidence that financial analysts' earnings forecasts have a significant effect on the US equity issuance volume. More firms go public when analysts forecast higher growth in the long term earnings of firms that recently went public. According to Rajan & Servaes (1998), *IPO firms exploit earnings optimism.* Such a proposition however has not been researched internationally. If swings in investors' sentiment is a major force behind the time series variation of equity issues as Loughran & Ritter (1995) argue then the use of earnings forecasts, as a proxy for investors sentiment, can help with the investigation of the driving forces of equity issuance volume.

Financial analysts' earnings forecasts should be affected by market conditions. When the economy is growing, that growth should cause an increase in the profitability of companies. That increase should be mirrored in analysts' earnings forecasts. If stock markets are characterised by a feeling of euphoria for the future profitability of firms, analysts should forecast higher growth in the earnings of firms and investors will be willing to pay high prices. On the other hand if the market is full of pessimism about the future growth of the economy, then analysts' earning forecasts should record that pessimism. Analysts' forecasts should reflect and to some degree even affect investors' sentiment.

Previous research has shown that analysts' earnings forecasts are biased. Analysts significantly overestimate the earnings. The forecast errors analysts make are significant and exhibit a significant time series variation. There are periods when analysts are more overoptimistic than usual. If the market sentiment is mirrored into analysts' earnings forecasts and firms that make an equity issue time the issue in periods when the market is overoptimistic about the earnings' growth either for the whole market or for the recent equity issuers then we should find that more firms raise capital when analysts' overoptimism is high.

The effect of analysts' earnings forecasts overoptimism has not been thoroughly researched. Rajan & Servaes (1998) have conducted the only study up to now that links the timing of IPOs with analysts' optimism. They find evidence of a significant relation between analysts' earnings forecasts and the number of firms going public. They report that analysts are overoptimistic for the future earnings of firms that recently went public. They find that when analysts forecast high growth in the long term earnings for the firms that in the previous year went public more firms decide to make an IPO in the current quarter. They find a significant relation not only between analysts' long term growth projections for recent IPOs and IPO volume but also between the magnitude of analysts' forecast error and the intensity of IPO activity suggesting that as analysts' overoptimism for the earnings potential for the recent IPOs increases more firms decide to go public.

Recently a new area of research has been opened up in the UK by the availability of Financial Analysts Earnings Forecasts by I/B/E/S in the UK which provides an opportunity to test whether UK IPO volume is affected by analysts' optimism. I/B/E/S provides consensus forecasts for a large number of UK firms starting from January 1987. I/B/E/S provides forecasted earnings per share for current year earnings, and forward year earnings for 2,3,and 4 years ahead as well as long term growth forecasts. The number of long term growth forecasts however is the 1987- 1998 period is very small , 2301, and for the period of 1987 to 1990 I/B/E/S had only 204 long term earnings forecasts making the use of long term growth forecasts for academic research totally impossible.

The number of current year earnings forecast however is large. Since 1987 and until 1998 more than 10,000 current year earnings forecasts are available and the numbers of forecasts are high even from 1987. These numbers allow us to test with some statistical power the effect of analysts' earnings forecasts on the IPO volume. If overoptimism for the earnings of recent issuers has a significant effect on UK IPO volume then we should find a significant relation between IPO volume and analysts' forecast errors. This chapter investigates the relationship between analysts' overoptimism and IPO volume.

Evidence from US studies have shown that IPO firms time the issue at periods around the peak of their operating performance. Jain & Kini (1994) and Mikkelson and Shah (1994) find that the operating performance of recently newly listed firms deteriorate after the issue. Teoh, Welsh & Wong (1998) report that issuers increase the reported earnings in the periods before the IPO by manipulating the accruals but they find a deterioration of earnings in the post-issue years as a result of managers not being able to further manipulate their earnings and keep them at a level similar to the pre -IPO years.

The use of financial analysts' earnings forecast can help in the understanding whether firms time the IPO around the peak of their profitability. Forecasted earnings reflect the current market view on the profitability of the issuers. If managers time the equity issue at the peak of the firm's profitability then analysts should revise downwards their earnings forecasts when the release of new information makes them realise that the current level of earnings can not be sustained.

Forecast revisions have never been used in the IPO literature before. They have been used before in event studies to see what impact that corporate announcement such as takeover bids and Seasoned equity issues have on the profitability of the firms. This is the first study that looks at the forecast revisions for firms conducting IPOs.

In this chapter we try to answer two questions. Is IPO volume in the UK affected by analysts' overoptimism? Do UK IPO firms time the issue at the peak of their profitability?

This chapter enhances the IPO literature by uncovering the analysts' accuracy in forecasting the earnings of newly listed firms in the UK and investigating for the first time the relation between UK analysts' earnings forecasts overoptimism and UK

IPO activity. We also look at how analysts revise their earnings forecasts as the UK IPO firms become more seasoned to see whether IPO firms time the issue at the peak of their profitability.

Our main findings can be summarised as follows:

1.Analysts significantly overestimate the earnings of all firms in the UK and that the larger the horizon of the forecast the larger the forecast errors. The forecast errors are larger for smaller firms and there is a significant variation in the magnitude of the errors across industries and across time.

2.UK analysts on average do not significantly overestimate the earnings of newly listed firms in the first year of their public life. Unadjusted forecast errors are not significantly different form zero and adjusted forecast errors are significantly positive indicating that the forecasts analysts make for IPOs, after being adjusted for the industry and size effect, are pessimistic relative to the forecasts made for the seasoned firms in the same industry and similar market value.

3.There is a significant time series variation in the magnitude of analysts' earnings forecast errors made for the IPOs in the first year of their public lives.

4.A significant relation between the magnitude of analysts' forecast errors and IPO activity is uncovered indicating that as analysts become more overoptimistic for recent IPOs or (less pessimistic on an adjusted base) more capital is raised from IPOs in the current month.

5.IPO firms do not time the equity issue around the peak of their profitability. Analysts revise upwards their earnings forecasts for 30 months after the month of the listing. IPO firms time the equity issue at the beginning or during a period of earnings growth.

The rest of the chapter follows like this: First we present evidence on the accuracy of UK analysts in forecasting the earnings of all the firms covered by I/B/E/S and how the forecasts errors vary across time and according to the industry and market value of the firm for which the earnings financial analysts are trying to forecast. Following that, we report our results on analysts' forecast accuracy for the IPO firms for the 5 years since the firms went public and how the forecast errors affect the IPO volume. At the last part of this chapter we look at how analysts revise their earnings forecasts for recently listed firms.

8.2. CHARACTERISTICS OF FINANCIAL ANALYSTS FORECAST ERRORS

Previous research has shown that analysts are on average overoptimistic for the earnings of firms. The forecasted earnings are on average higher than the actual earnings, Berry & Dreman(1995),Chopra (1998) among others. Analysts' forecast accuracy however increases as the month of the announcement of earnings approaches. Our sample comprises of forecasts made for the current year earnings and were made up to 12 month prior to the announcement of the earnings provided by I/B/E/S . Our sample covers the period January 1987 to December 1998. The number of forecasts depends on the horizon of the forecast. The larger number of forecasts were made 1 month prior to the earnings are announced, 10149 forecasts , and the smaller number of forecasts are made 12 months before the announcement of the earnings ,5342 forecasts. As with other studies, we find that analysts' forecasts are significantly overoptimistic. The forecast error is calculated as *(actual earnings - Forecasted earnings) / share price at the time the forecast is made.*[16] The average forecast errors for all 12 forecast horizons are negative and significantly different from zero. Forecast accuracy decreases as the time horizon of the forecast increases. Results on average forecast errors made for all firms covered in I/B/E/S are in table 8.1. When analysts forecast the earnings one month before the earnings announcement, they overestimate the earnings by 1.6% as a percentage of the share price. This overestimation increases to 2.8% when they forecast the earnings 6 month before the announcement of earnings and goes to 3.9% when the forecast is made one year before the announcement. Median forecast errors are non-negative for the forecast horizons of 1 to 6 months. Only when the forecasts are made 7 to 12 months before the earnings announcements are median forecast errors negative.

47.2% of all forecasts made one month before the announcement of the earnings are underestimating the earnings and only 32% of forecasts overestimate the earnings with 20.8% of forecasts being accurate. As the forecast horizon increases, the percentage of positive errors decrease and those of negative errors increase. When analysts forecast the earnings 6 months prior to the announcement of the earnings, 47.6% of forecasts are underestimated and 49.4% of forecasts are overestimated. 12

[16] We deflate the forecast errors by the share price and not by the actual earnings per share. That is based on the assumption that the price is a more effective deflator than earnings. Christie (1987) discusses the merits of using price as a deflator of forecasts. However we also do it for the sake of comparability with the results of Rajan & Servaes (1998).

months before their announcement, 59% of their forecast are overoptimistic and only 39.6% are pessimistic. Appendix 8.1 lists the average forecast errors analysts make for the whole sample of I/B/E/S and other descriptive statistics.

TABLE 8.1:AVERAGE FINANCIAL ANALYSTS EARNINGS FORECAST ERRORS FOR ALL THE FIRMS COVERED IN I/B/E/S IN THE UK

The sample consists of all firms for which forecasts for the current year earnings were available from I/B/E/S in the period 1987 to 1998 in the UK. The Horizon of the forecast refers to the period, in months, between the time the forecast is made and the announcement of the current year earnings. The errors are calculated as the difference between the Actual Earnings per share and the Forecasted earnings per share divided over the share price at the time the forecast is made.

HORIZON OF THE FORECAST	AVERAGE FORECAST ERROR (FULL SAMPLE)	AVERAGE FORECAST ERROR (EXCLUDING OBSERVATIONS BELOW AND ABOVE 3 STANDARD DEVIATIONS FROM THE MEAN)	AVERAGE FORECAST ERROR (EXCLUDING OBSERVATIONS 1% AT THE TWO TAILS)
1 month	-0.016*	-0.005*	-0.004*
2 months	-0.018*	-0.006* c	-0.005* b
3 months	-0.026*	-0.012*	-0.006* b
4 months	-0.029*	-0.015* c	-0.008* b
5 months	-0.025*	-0.013*	-0.009* b
6 months	-0.028*	-0.015* c	-0.011* b
7 months	-0.029*	-0.015*	-0.013* b
8 months	-0.03*	-0.017*	-0.014* b
9 months	-0.032*	-0.018*	-0.015*
10 months	-0.035*	-0.021* c	-0.016*
11 months	-0.035*	-0.020* c	-0.017*
12 months	-0.039*	-0.024* b	-0.02* b

** Denotes significantly different from zero at 1% two tails*
a :Denotes that the average error of that forecast horizon is significantly more negative than the average forecast error of the immediate shorter horizon at 1% level two tails
b :Denotes that the average error of that forecast horizon is significantly more negative than the average forecast error of the immediate shorter horizon at 5% level two tails
c :Denotes that the average error of that forecast horizon is significantly more negative than the average forecast error of the immediate shorter horizon at 10% level two tails

The average forecast errors however are very sensitive to the presence of outliers. There is a small number of observations that distort the data. For example the most negative forecast error with a forecast horizon of 4 months is -91.1. If we exclude that observation the average forecast error for the 4 month forecast horizon drops from -2.9% to -1.9%. Therefore, we also report the average forecast errors excluding all observations that are over or below 3 standard deviations from the mean and alternatively by removing the 1% at each tail of the distribution (columns 3 and 4 in table 8.1). As a results of these exclusions of outliers, the average forecast errors decrease (become less negative) by up to two thirds of the average error for the whole sample. The average forecast error with 1 month horizon drops to -0.5% and -0.4% after the exclusions respectively from -1.6% for the whole sample. The average forecast error with a 6 month forecast horizon decreases to -1.5% and -1.1% after the exclusions respectively from -2.8% for the whole sample. Even though errors are significantly reduced, they remain statistically significantly different from zero. Furthermore, even after the exclusions, the same pattern of improved accuracy as the announcement of the earnings approaches is observed. The differences between the average forecast errors from the average error of the immediate shorter forecast horizon is statistical significant for most of the pairs. More details (medians, maximum, minimum etc.) about the forecast errors for the whole I/B/E/S sample and the sample after the exclusions are in the appendices 8.1, 8.2 and 8.3.

Apart from the horizon of the forecast, there are some other factors that affect the magnitude of the errors. Brown (1997) reports significant variations in forecast errors for different industries. The sector effect is also present in our sample. More specifically as we can see in table 8.2, analysts' forecast errors differ from one industry to another. In Figure 8.1 we can see that the average errors with a 12 month forecast horizon (after the 1% exclusions) for firms in the Technology or Capital [17] sector are much higher (-2.49% and -2.47% respectively) than the errors made for the Utilities and Transport (-0.31% and -1.6% respectively). The average forecast error of all forecast horizons for the Utility sector is -0.0017 while the average forecast error of all forecast horizons for the technology sector is -0.01624.

[17] We use the sector classification made by IBES

TABLE 8.2: AVERAGE FINANCIAL ANALYSTS' FORECAST ERRORS FOR DIFFERENT INDUSTRIES

INDUSTRY	UTILITY	TRANSPORT	HEALTH	FINANCE	ENERGY	CAPITAL	TECHNOLOGY
Forecast Horizon 1 month	-0.0001 (137)	-0.0004 (162)	-0.0031 (377)	-0.0049 (1387)	-0.0072 (202)	-0.0046 (2323)	-0.0062 (542)
Forecast Horizon 2 months	-0.0001 (124)	-0.0029 (143)	-0.0046 (371)	-0.0068 (1365)	-0.0075 (199)	-0.0055 (2265)	-0.0075 (520)
Forecast Horizon 3 months	-0.0009 (121)	-0.0038 (137)	-0.0052 (370)	-0.0068 (1365)	-0.0077 (199)	-0.0074 (2217)	-0.0086 (516)
Forecast Horizon 4 months	-0.0010 (118)	-0.0045 (134)	-0.0051 (367)	-0.0076 (1353)	-0.0084 (199)	-0.0098 (2174)	-0.0120 (507)
Forecast Horizon 5 months	-0.0004 (115)	-0.0047 (129)	-0.0057 (360)	-0.0099 (1319)	-0.0097 (196)	-0.0108 (2129)	-0.0145 (489)
Forecast Horizon 6 months	-0.0003 (111)	-0.0059 (121)	-0.0064 (352)	-0.0108 (1296)	-0.0112 (194)	-0.0135 (2073)	-0.0169 (478)
Forecast Horizon 7 months	-0.0006 (108)	-0.0064 (121)	-0.0087 (350)	-0.0128 (1289)	-0.0127 (193)	-0.0152 (2028)	-0.0184 (473)
Forecast Horizon 8 months	-0.0055 (106)	-0.0079 (117)	-0.0103 (344)	-0.0145 (1277)	-0.0132 (193)	-0.0177 (1969)	-0.0216 (468)
Forecast Horizon 9 months	-0.0018 (106)	-0.0114 (117)	-0.0105 (335)	-0.0141 (1250)	-0.0122 (183)	-0.0197 (1905)	-0.0236 (461)
Forecast Horizon 10 months	-0.0020 (102)	-0.0094 (114)	-0.0097 (325)	-0.0155 (1200)	-0.0129 (182)	-0.0217 (1808)	-0.0237 (449)
Forecast Horizon 11 months	-0.0068 (92)	-0.0092 (110)	-0.0116 (295)	-0.0157 (1094)	-0.0133 (170)	-0.0221 (1582)	-0.0248 (422)
Forecast Horizon 12 months	-0.0031 (71)	-0.0160 (80)	-0.0133 (224)	-0.0199 (765)	-0.0190 (118)	-0.0247 (1128)	-0.0249 (302)
Average of all forecast horizons	-0.00170	-0.00629	-0.00752	-0.01113	-0.01090	-0.01343	-0.01624

The errors are the average forecast errors of the industry after the exclusions of the outliers in the 1% at the two tails of the distribution. In parentheses we have the number of forecast errors.

Apart from the industry classification, another factor that has been found to affect errors is the market size of the firms for which analysts earnings are trying to predict, Bamber (1987), Peters (1993), Brown (1997). To find the effect of the firms' size on forecast errors we ranked all firms that are covered in I/B/E/S according to their market value at the time the of the fiscal year end. We then transformed their market values at December 1996 prices. Following that we split the total number of observations into 4 similar size quartiles and calculated the average forecast error in each quartile. Small firms are the firms in the smallest size quartile. Large firms are the firms in the largest size quartile.

In table 8.3 and figure 8.2 we see that the larger the size of the company the smaller the errors. For example the forecast error with 1 month forecast horizon is -1.16% for small firms and -0.06% for large firms. The error with a 12 month forecast horizon is -5.12% for the small firms and -0.69% for larger firms. Small companies seem to offer more negative surprises to analysts. The average forecast error of all forecast horizons for the small firms is -0.0512 while the average forecast error of all forecast horizons for the large firms is significantly lower, -0.0069.

TABLE 8.3: AVERAGE FINANCIAL ANALYSTS' FORECAST ERRORS FOR FIRMS WITH DIFFERENT MARKET SIZE

	AVERAGE ERROR IN SMALL SIZE QUARTILE	AVERAGE ERROR IN MEDIUM 1 SIZE QUARTILE	AVERAGE ERROR IN MEDIUM2 SIZE QUARTILE	AVERAGE ERROR IN LARGER SIZE QUARTILE
Forecast Horizon 1 month	-0.0116	-0.0027	-0.0014	-0.0006
Forecast Horizon 2 months	-0.0152	-0.0035	-0.0020	-0.0010
Forecast Horizon 3 months	-0.0176	-0.0049	-0.0027	-0.0015
Forecast Horizon 4 months	-0.0195	-0.0060	-0.0040	-0.0026
Forecast Horizon 5 months	-0.0237	-0.0070	-0.0047	-0.0034
Forecast Horizon 6 months	-0.0279	-0.0081	-0.0053	-0.0041
Forecast Horizon 7 months	-0.0316	-0.0103	-0.0065	-0.0047
Forecast Horizon 8 months	-0.0376	-0.0118	-0.0070	-0.0055
Forecast Horizon 9 months	-0.0393	-0.0128	-0.0076	-0.0059
Forecast Horizon 10 months	-0.0414	-0.0145	-0.0089	-0.0064
Forecast Horizon 11 months	-0.0422	-0.0159	-0.0088	-0.0072
Forecast Horizon 12 months	-0.0512	-0.0191	-0.0116	-0.0069
Average of all forecast horizons	-0.0279	-0.0090	-0.0055	-0.0039

All firms that are covered in I/B/E/S are ranked according to their market value in December 96 prices at the time the earnings are reported.. Following that, we split the 9.798 firms for which data about their market values at the time of their earnings announcements have been found into 4 similar size quartiles. Small firms are the firms in the smallest size quartile. Large firms are the firms in the largest size quartile. In parentheses we have the number of observations

Finally, we can see in table 8.4 that there is a wide variation in the magnitude of analysts errors across time. Figure 8.3 shows the average forecast error made for 4 out of the 12 different forecast horizons from 1987 to 1997 for all firms covered in I/B/E/S . When analysts were forecasting the earnings in 1991 they were much more overoptimistic than 1994. The average forecast errors made in 1991 for a 12 month forecast horizon is -4.2% but it is only -0.09% in 1994. The average forecast error of all forecast horizons made in 1990 is -0.0201 while the average forecast error of all forecast horizons made in 1996 is significantly reduced to -0.0071.

So, in order to investigate whether analysts are overoptimistic for the earnings of IPO firms the proper adjustments have to be made. IPO firms are usually small firms which as we saw are characterised of higher forecast errors. The use of unadjusted forecast errors alone is not recommended. The three factors, (industry size, and year) are three factors that we take into account into our analysis.

TABLE 8.4: AVERAGE FINANCIAL ANALYSTS' FORECAST ERROR IN YEARS 1987 TO 1997

YEAR	*1987*	*1988*	*1989*	*1990*	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*
Forecast Horizon 1 month	-0.0011 (583)	-0.0008 (906)	-0.0026 (909)	-0.0045 (802)	-0.0075 (802)	-0.0090 (853)	-0.0065 (933)	-0.0029 (909)	-0.0034 (969)	-0.0034 (999)	-0.0020 (1026)
Forecast Horizon 2 months	-0.0002 (494)	-0.0007 (905)	-0.0041 (897)	-0.0064 (791)	-0.0088 (790)	-0.0114 (844)	-0.0091 (892)	-0.0050 (896)	-0.0052 (973)	-0.0034 (999)	-0.0031 (1018)
Forecast Horizon 3 months	-0.0004 (547)	-0.0003 (868)	-0.0048 (887)	-0.0083 (791)	-0.0128 (772)	-0.0130 (804)	-0.0096 (983)	-0.0065 (859)	-0.0065 (978)	-0.0040 (1090)	-0.0028 (1012)
Forecast Horizon 4 months	-0.0005 (505)	-0.0009 (857)	-0.0051 (972)	-0.0121 (797)	-0.0152 (742)	-0.0170 (754)	-0.0099 (1085)	-0.0059 (846)	-0.0065 (1002)	-0.0052 (1058)	-0.0046 (813)
Forecast Horizon 5 months	-0.0017 (541)	-0.0013 (816)	-0.0065 (1000)	-0.0154 (735)	-0.0187 (751)	-0.0195 (836)	-0.0111 (976)	-0.0065 (893)	-0.0087 (969)	-0.0060 (974)	-0.0048 (753)
Forecast Horizon 6 months	-0.0029 (575)	-0.0015 (818)	-0.0088 (898)	-0.0194 (769)	-0.0216 (791)	-0.0214 (726)	-0.0116 (996)	-0.0083 (862)	-0.0090 (1022)	-0.0073 (950)	-0.0052 (613)
Forecast Horizon 7 months	-0.0026 (641)	-0.0028 (853)	-0.0112 (840)	-0.0230 (747)	-0.0233 (775)	-0.0274 (749)	-0.0141 (952)	-0.0072 (912)	-0.0115 (954)	-0.0077 (951)	-0.0072 (502)
Forecast Horizon 8 months	-0.0025 (738)	-0.0046 (779)	-0.0137 (803)	-0.0284 (695)	-0.0300 (786)	-0.0298 (785)	-0.0145 (869)	-0.0069 (885)	-0.0108 (935)	-0.0097 (949)	-0.0082 (465)
Forecast Horizon 9 months	-0.0032 (656)	-0.0046 (780)	-0.0150 (774)	-0.0308 (696)	-0.0324 (767)	-0.0281 (788)	-0.0165 (822)	-0.0078 (894)	-0.0116 (925)	-0.0089 (935)	-0.0079 (428)
Forecast Horizon 10 months	-0.0042 (584)	-0.0052 (747)	-0.0184 (700)	-0.0325 (672)	-0.0348 (736)	-0.0284 (800)	-0.0167 (765)	-0.0077 (889)	-0.0124 (898)	-0.0099 (928)	-0.0074 (371)
Forecast Horizon 11 months	-0.0043 (519)	-0.0062 (689)	-0.0206 (574)	-0.0354 (636)	-0.0353 (699)	-0.0286 (752)	-0.0130 (565)	-0.0088 (864)	-0.0131 (847)	-0.0100 (901)	-0.0059 (319)
Forecast Horizon 12 months	-0.0040 (363)	-0.0075 (496)	-0.0242 (327)	-0.0396 (509)	-0.0423 (509)	-0.0321 (572)	-0.0220 (289)	-0.0087 (729)	-0.0162 (575)	-0.0131 (665)	-0.0033 (204)
Average of all forecast horizons	**-0.0023**	**-0.0027**	**-0.0099**	**-0.0201**	**-0.0228**	**-0.0217**	**-0.0121**	**-0.0068**	**-0.0093**	**-0.0071**	**-0.0046**

In parentheses we have the number of observations

8.3. Financial Analysts earnings forecasts errors for Firms making an IPO.

Rajan & Servaes (1998) find that analyst significantly overestimate the earnings of firms that go public during the first two years of their public lives. No study has been conducted in the UK to see whether analysts are overoptimistic for the earnings of newly listed firms in the UK. To fill this gap we use UK data of Initial Public Offerings and financial analysts earnings forecasts made for these IPOs. The source of the IPO sample is the KPMG New Issue Statistics. Our sample covers the years from 1987 to 1996. Table 8.5 contains details about the number of firms making Initial Public Offers with the method of offer for sale, offer for subscription or placings and the amount of capital raised in December 1996 prices (excluding the privatisations) from 1987 to 1996. According to the KPMG New Issue statistics, during that 10-year period 902 firms went public with the method of offer for sale, offer for subscription or placing. There is a big variation in IPO activity across time. During 1994, 179 firms went public while in 1991 the number of newly admitted firms was only 18. There is also a big variation in the amount of capital raised from IPOs with 1996 being the most active year with almost £10 billion raised. The I/B/E/S however does not cover the whole sample of our IPOs. The number of IPO firms covered with earnings forecasts in the first year of the life of the IPOs varies over time and according to the horizon of the forecast. For example, we have 184 forecasts made in the first year of the IPOs that are forecasting the current year earnings 3 months before the earnings are announced but only 83 forecasts made in the first year of the life of the IPO and were forecasting the current year earnings 12 months before the earnings are announced. The level of coverage of the IPOs during their first public life varies from only 11% of the IPOs that went public in 1996 to 40% of IPOs that came into the market in 1991.

TABLE 8.5: ANNUAL DISTRIBUTION OF INITIAL PUBLIC OFFERINGS AND I/B/E/S COVERAGE OF IPOs

The sample consists of offers of Common Stock made with the method of offer for sale and/or offer for subscription. The IPOs are collected from the KPMG NEW ISSUE STATISTICS. All Privatisations are excluded from the sample. First Day returns is the Price at the end of the first trading day minus the offer price over the offer price.

YEAR	NUMBER OF IPOs	Number of IPOs covered by I/B/E/S in the **first** year of the life of the IPOs with a 3 month forecast horizon	Number of IPOs covered by I/B/E/S at least in one of the first five years of the life of the IPO	IPO PROCEEDS £000 (No privatisations) DEC 1996 prices
1987	118	17 (14%)	63 (53%)	813,188
1988	125	33 (26%)	70 (56%)	1,806,070
1989	82	23 (28%)	41 (50%)	526,548
1990	30	12 (26%)	15 (50%)	156,043
1991	18	13(40%)	11 (61%)	425,514
1992	33	8(24%)	26 (78%)	1,232,279
1993	137	18(13%)	66 (48%)	5,363,616
1994	179	21(13%)	63 (35%)	8,788,834
1995	75	24 (32%)	17 (22%)	2,514,200
1996	105	12(11%)	12 (11%)	9,973,404

IBES coverage increases as the IPO firms become more seasoned. During the second year of the public life of the IPO, I/B/E/S provides 328 forecasts that were forecasting the current year earnings 3 months before the earnings are announced and 174 forecasts that were forecasting the current year earnings 12 months before the earnings are announced. The total number of IPOs for which I/B/E/S provides forecasts for the current year earnings for at least one of the first five years from the listing is 384.

We focus our attention to the earnings forecasts made from year one to year five and we want to see if the IPO activity in a given month is affected by the level of analysts overoptimism for the recent IPOs or the by the level of analysts overoptimism for the whole market. If managers exploit analysts earnings overoptimism we should find that as the magnitude of analysts overoptimism increases more capital is raised from Initial

Public Offers. So, the hypothesis we are testing is:

Ho: There is no relation between analysts' forecast errors made for the recent IPOs and/or the errors made for all the firms in the market and IPO volume.

Hε: There is a negative and significant relation between analysts' forecast errors made for the recent IPOs and/or the errors made for all the firms in the market and IPO volume.

To provide support for the argument that analysts earnings overoptimism affects the IPO activity we should find a significant negative relation between the two and reject the null hypothesis of no significant negative relation.

First we need to know whether analyst are overoptimistic for the earnings of IPOs during their early stages of their public lives. Table 8.6 reports the forecast errors that were made during the first five years of the IPO from the day of its listing. The same results are also presented in figure 8.4. Since analysts' accuracy improves as the forecast is made closer to the announcement of the earnings we report forecast errors for the 12 different forecast horizons.

We find that in the first year of the IPO, IPO forecast errors are not significantly different from zero for the 10 out of the 12 forecast horizons. Forecast errors with forecast horizons of 2 to 5 months are positive but insignificant from zero. Forecast errors with a forecast horizon of 6 to 12 months are negative but only the forecasts with 11 and 12 months are significantly negative at 5% level of significance using two- tail tests. The average forecast error of all forecast horizons made in the 1st year of the life of the IPOs is -0.00091 which is not significantly different from zero even at 10% level. Our results indicate that when forecasts are made during the first year after the IPO, analysts do not significantly overestimate the earnings. These results are in contrast with the results of Rajan and Servaes (1998) who find that analysts overestimate the earnings of the IPOs in the first year of their life. They find that the average forecast error with a three month horizon is -0.0336 as a percentage of their share price and we find that the average error with the same forecast horizon is 0.00094. The forecast error with a twelve month horizon in Rajan and Servaes (1998) was -0.0577 and we find that it is -0.0092. Potential reasons for these differences, apart from the obvious fact that we investigate the UK market and they look at forecasts made for US firms, is that the time period they study is 1975 to 1987 and we study the period of 1986 to 1996. Analyst' forecast accuracy may have improved over time creating smaller forecast errors. Furthermore, the number of forecasts in their sample is approximately 3 times larger than ours. In addition, Rajan and Servaes (1998) calculate their forecast horizons relative to the month of the fiscal year end and not relative to the month of the announcement of earnings as we do. We find that on average in the I/B/E/S sample, the announcement of earnings is made 5 months after the fiscal year end (median 4 months). So, when Rajan and Servaes (1998) report an average error of 3 month forecast horizon, relative to the fiscal year end) of -0.0577 it is an error of 8 month forecast horizon relative to the announcement of earnings. The difference however between the errors we find in the UK and Rajan and Servaes (1998) in the US remains even after that is taken into account.

Analysts start to significantly overestimate IPOs earnings in the UK in the second year after the IPO. Forecast errors made in the second year of the life of the IPO are significantly negative for 9 out of 12 forecast horizons but still are much lower than the forecast errors Rajan and Serves (1998) found. The average forecast errors made in the second year of the life of the IPO with a 6 and 12 month forecast horizons are -0.0043 and -0.0118 and Rajan and Servaes (1998) report average errors of -0.0345 and -0.0534 respectively. Forecast errors made in the second year after the IPO are more negative than the errors made in the first year for all forecast horizons and significantly at least at 10% , two tail tests, for 8 out of the 12 forecast horizons. The average forecast error of all forecast horizons made in the 2nd year of the life of the IPOs is -0.0056 which is significantly different from zero at 1% level and is significantly more negative than the average error of all forecast horizons made in year 1 at 1% level of significance.

Average forecast errors made during the 3rd year of the life of the IPOs are significantly negative for all forecast horizons. Average errors made during the 3rd year are more negative than the average errors made in year 2 for all forecast horizons and significantly so at 10% level, two tail tests, for 8 out of 12 forecast horizons. The average forecast error of all forecast horizons made in the 3rd year of the life of the IPO is -0.010 which is significantly different from zero at 1% level and is significantly more negative at 1% level than the average error of all forecast horizons made in the 2nd year..

TABLE 8.6: AVERAGE FINANCIAL ANALYSTS' FORECAST ERRORS FOR IPOs DURING THE FIRST 5 YEAR OF THEIR PUBLIC LIFE.

The sample consists of all IPOs for which forecasts for the current year earnings were available from I/B/E/S in the period 1987 to 1998. The Horizon of the forecast refers to the period, in months, between the time the forecast is made and the announcement of the current year earnings. The errors are calculated as the difference between the Actual Earnings per share and the Forecasted earnings per share divided over the share price at the time the forecast is made and are recorded according to the month the forecast is made.

	1st year		2nd year		3rd year		4th year		5th year	
Horizon of the forecast	Average Forecast error made in 1st Year from the Listing	Number of Forecast errors in the 1st year	Average Forecast error made in 2nd Year from the Listing	Number of Forecast errors in the 2nd year	Average Forecast error made in 3rd Year from the Listing	Number of Forecast errors in the 3rd year	Average Forecast error made in 4th Year from the Listing	Number of Forecast errors in the 4th year	Average Forecast error made in 5th Year from the Listing	Number of Forecast errors in the 5th year
1 month	-0.0005	158	-0.0008	347	-0.0017**	357	-0.0061* a	323	-0.0077*	272
2 months	0.00081	170	-0.0005	345	-0.0045* b	335	-0.0065* a	306	-0.0073*	272
3 months	0.00094	184	-0.0012	328	-0.0054* b	343	-0.0078* a	292	-0.0092*	261
4 months	0.00066	182	-0.0021**c	335	-0.0081* a	332	-0.01* a	281	-0.0117*	259
5 months	0.00105	176	-0.0036* a	336	-0.0089* b	327	-0.0129* a	275	-0.0134*	247
6 months	-0.0004	166	-0.0043* c	316	-0.0102* b	320	-0.014* a	270	-0.0189*	245
7 months	-0.0013	162	-0.0062* b	313	-0.0131*	311	-0.0152* a	264	-0.0188*	239
8 months	-0.0013	163	-0.0094* a	309	-0.0126*	303	-0.0188* a	259	-0.0184*	235
9 months	-0.0001	156	-0.0093* a	303	-0.0144* c	289	-0.0182* a	253	-0.0204*	227
10 months	-0.0018	143	-0.0119* a	282	-0.0138*	281	-0.0214* a	255	-0.0201*	215
11 months	-0.0056**	130	-0.0123* c	263	-0.0155*	248	-0.02 31* a	227	-0.0183*	191
12 months	-0.0092**	83	-0.0118*	174	-0.0203* c	182	-0.0267* a	164	-0.0181*	129
Average of all forecast horizons	-0.00091	1860	-0.0056* a	3651	-0.010 * a	3628	-0.0141 * a	3169	-0.0147 *	2792

** denotes Significance from zero at 1% two tail tests*
*** denotes Significance from zero at 5% two tail tests*
**** denotes Significance from zero at 10% two tail tests*
a , b , c Denote significance from same forecast horizon of the previous year of the life of the IPO at 1%, 5% and 10% respectively at two-tail tests.

The average forecast errors continue to be significantly negative in the 4^{th} year after the listing for all forecast horizons. The average errors made in year 4 are significantly more negative than the errors made in the year 3 for all 12 forecast horizons. The average forecast error of all forecast horizons made in year 4 is -0.01418 which is significantly different from zero at 1% and is significantly more negative at 1% than the average forecast error made in the 3^{rd} year.

The average forecast errors made in year 5 remain significantly negative for all forecast horizons but they do not differ from the errors made in year 4. The average forecast error of all forecast horizons made in the 5^{th} year is -0.0147, significantly different from zero at 1% but does not differ from the average error of all forecast horizons made in year 4.

The analysis of unadjusted forecast errors reveals that analysts are not overoptimistic in the first year of their public lives for the current year earnings of firms that go public.

We showed however earlier that analysts are on average overoptimistic for all firms and that the forecast errors are affected by the industry and the size of the firms and the year the forecast is made. So, in order to get the error that is unique for the IPOs we have to adjust them for these three factors.

Table 8.7 reports the adjusted average forecast error analysts make for the IPOs in the first five years from their listing. Adjusted forecast error for firm *i* is computed by subtracting from the unadjusted forecast error for firm *i* the average forecast error analyst made in forecasting the earnings for firms in the same industry with firm i and in the same Quartile of market size with firm *i* within that industry and in the same year with a same forecast horizon with the unadjusted error. For more information on how the adjusted errors are computed see section 4.5. The adjusted forecast errors are plotted in figure 8.5.

In true terms (adjusted errors), IPOs positively and significantly surprise investors in the first and second years. Average adjusted forecast errors made in the first and second year of the IPO, for all forecast horizons, are significantly positive.

The average forecast error of all forecast horizons made in the 1st year is 0.00895 which is significantly positive at 1% level. Average adjusted forecast errors made during the 2nd year after the IPOs are significantly positive for all 12 forecast horizons. Average adjusted forecast errors in the second year may be positive but are smaller than the average errors made in the first year and significantly so for 6 out of the 12 forecast horizons. The average forecast error of all forecast horizons made during the 2nd year is 0.00497, significantly different from zero at 1%, and also significantly lower than the average error made in year 1 at 1% level of significance.

These findings are in contrast with the finding of Rajan and Servaes (1998) who found that adjusted forecast errors are negative and significantly different form zero. For example we find that the average adjusted forecast errors made in the first and second year of the life of the IPO with a twelve month forecast horizon are 0.0110 and 0.0085,respectively and Rajan and Servaes (1998) find that the errors with the same horizon are -0.0321 and -0.0205 respectively.

In the 3rd year after the IPO, the average adjusted forecast errors are significantly positive for 3 out of the 12 forecast horizons and the average adjusted error of all forecast horizons made in the 3rd year is 0.0022, significantly positive at 10% and significantly lower than the average error made in year 2 at 1% level.

In the 4th year after the IPO, average adjusted forecast errors are significantly positive for only 2 out of the 12 forecast horizons. The average adjusted error of all forecast horizons is positive, 0.00155, but not significantly different from zero but it is significantly lower than the average error made in year 3.

In the 5th year after the IPO, the average adjusted forecast errors are not different from zero apart from the errors made with a forecast horizon of 11 and 12 months which are significantly positive at 10% level of significance. The average forecast errors made in year 5 are not different from the average forecast errors made in year 4 for any forecast horizon. The average error made in year 5 of all forecast horizons is 0.00167 , not significantly different from zero and in also not different from the average error of all forecast horizons made in year 4.

TABLE 8.7: AVERAGE FINANCIAL ANALYSTS' ADJUSTED FORECAST ERRORS FOR IPOs DURING THE FIRST 5 YEAR OF THEIR PUBLIC LIFE.

The sample consists of all IPOs for which forecasts for the current year earnings were available from I/B/E/S in the period 1987 to 1998. The Horizon of the forecast refers to the period, in months, between the time the forecast is made and the announcement of the current year earnings. The errors are calculated as the difference between the Actual Earnings per share and the Forecasted earnings per share divided over the share price at the time the forecast is made and are recorded according to the month the forecast is made. Errors are adjusted by subtracting the average errors analysts make for the firms in the same industry, and the same quartile in terms of the market value of the firm at the same year.

	1st year		2nd year		3rd year		4th year		5th year	
Horizon of the forecast	Average Adjusted Forecast error made in 1st Year from the Listing	Number of Adjusted Forecast errors in the 1st year	Average Adjusted Forecast error made in 2nd Year from the Listing	Number of Adjusted Forecast errors in the 2nd ye`ar	Average Adjusted Forecast error made in 3rd Year from the Listing	Number of Adjusted Forecast errors in the 3rd year	Average Adjusted Forecast error made in 4th Year from the Listing	Number of Adjusted Forecast errors in the 4th year	Average Adjusted Forecast error made in 5th Year from the Listing	Numbe Adjust Foreca errors i the 5th year
1 month	0.0027***	106	0.0033*	325	0.0025*	343	-0.0009	298	-0.0008	263
2 months	0.0055*	164	0.0045*	327	0.0017	324	0.0009	284	0.0019	264
3 months	0.0067*	178	0.0045*	315	0.0022***	329	0.0007	272	0.0017	253
4 months	0.0070*	177	0.0054*	322	0.0007	319	0.0005	262	0.0010	251
5 months	0.0095*	171	0.0049*	324	0.0015	314	-0.0005	254	0.0015	243
6 months	0.0097*	160	0.0053*	307	0.0017	310	0.0005	248	-0.0013	240
7 months	0.0099*	155	0.0053*	304	0.0005	300	0.0040***	245	-0.0011	234
8 months	0.0126*	157	0.0048*	300	0.0041***	293	0.0031	240	0.0018	230
9 months	0.0120*	150	0.0054*	294	0.0017	279	0.0051***	234	0.0016	222
10 months	0.0113*	138	0.0042**	274	0.0035	267	0.0024	236	0.0036	214
11 months	0.0099*	125	0.0052*	257	0.0038	236	0.0012	210	0.0054***	189
12 months	0.0110*	80	0.0085*	170	0.0046	173	0.0030	155	0.0097***	126
Average of all forecast horizons	0.00895*	1761	0.00497 * a	3519	0.0022*** a	3487	0.00155 a	2938	0.00167	2729

** denotes Significance at 1% two tail tests*
*** denotes Significance at 5% two tail tests*
**** denotes Significance at 10% two tail tests*
The number of adjusted forecast errors is different from the number of unadjusted forecast errors because details about the market value could not be found for some companies

Unlike Rajan & Servaes (1997), we do not find that IPOs in the UK negatively surprise investors in the first year of the listing. We find that when analysts forecast the earnings of IPOs during the first year of their public life the average unadjusted errors are not significantly negative. In other words, it seems that analysts that forecast earnings in the first year after the IPO are accurate in their predictions. When the errors are adjusted for industry and size , we find that IPOs positively surprise investors in the first three years. After that, adjusted errors are not significantly different from zero.

Our evidence suggest that analysts do not "inflate" their earnings forecasts when they forecast the profitability of the newly listed stocks during their first year of their public life. That indicates that UK analysts forecast "prudently" the earnings of newly listed firms and do not overestimate the forecasts they make.

Even though analysts do not make overoptimistic forecasts for the earnings of IPOs during the first year of their lives there is a big variation in the sign and the magnitude of the errors across time.

We showed in figure 8.4 that analysts overoptimism for the whole I/B/E/S sample varies across time. While analyst in general are overoptimistic there are periods when this overoptimism is very severe. Even though we find that (unadjusted) forecasts made for IPOs in the first year of their public life on average are not significantly overoptimistic, these errors exhibit variations across time. Figure 8.6 shows the average unadjusted forecast errors for 2 out of the 12 forecast horizons, made by analysts in the first year of the IPOs per year (solid lines). We can see that even though we found in table 8.6 that the average unadjusted forecast errors made in the first year of the IPO are not significantly different from zero, there are variations in the magnitude of these errors across time. The average unadjusted forecast error with a 7 month horizon was 0.0071 in 1990 but became -0.0069 two years later in 1992. All other forecast windows exhibited similar variations (not reported). Even for the adjusted errors (Dotted lines), made in the first year of the IPOs which we found to be significant positive, we can see that there are some years when adjusted forecast errors are lower (less positive). For example, the average adjusted forecast error with a 7 month forecast horizon was 0.024 in 1989 and dropped to 0.007 in 1991. So, even by using adjusted forecast errors for IPOs we can see that there is a variation in the magnitude of analysts' overoptimism or rather pessimism since adjusted forecast errors are positive. It could be the case that these swings in analysts' "mood" affect the IPO activity.

8.4. FINANCIAL ANALYSTS EARNINGS FORECAST ERRORS AND THE TIMING OF INITIAL PUBLIC OFFERS.

Rajan & Servaes (1998) argue that "if analysts are overoptimistic about the growth potential of recent IPOs and there is substantial variation in analysts overoptimism across time more firms should come to the market when this overoptimism is severe".

We investigate whether the IPO activity in the UK is affected by the magnitude of analyst's forecast errors for the recent IPOs or the whole market. Unlike Rajan and Servaes (1997) who use long term growth forecasts we use the forecast errors as explanatory variable. Analysts may be forecasting high growth in earnings in a certain period but this high prospects may represent the reality. Managers will not exploit overoptimism if they time the issue at a period when analysts forecasts are optimistic but reflect the true picture. However, when managers using the inside information they posses, realise that the forecasted earnings are above the true value will benefit if they make the issue at a period when earnings forecasts are irrationally high. We want to see if managers deliberately exploit favourable investors sentiment and the forecast errors are the best measure for that. Besides that, the number of long term growth forecast available in the UK data of I/B/E/S is very limited. Only 2300 long term growth forecasts are available compared while more than 10.000 forecast are available for current year earnings in the whole sample of I/B/E/S . In order to reject the null hypothesis that there is no significant relation between the magnitude of analysts forecast errors and the IPO volume in favour of the alternative hypothesis of a significant negative relation between the forecast errors and the volume of IPOs we regress the amount of capital raised from IPOs in real terms per month(prices Dec 1996 excluding privatisations) against the average forecast errors (both adjusted and unadjusted) analysts made during their first public year of the IPOs in forecasting their current year earnings of firms that came into the market in the previous 12 months[18].

The regression analysis that involves the use of forecast errors has some problems to solve. First, the forecast errors are higher when the forecasts are made further away from the month of the announcement of the earnings. Therefore a researcher has to options. First to use a different regression for the forecast errors with different forecast horizon and second to average the forecast errors of all forecast horizons and use one regression only. In the second case, the fact that the forecast errors with large forecast horizons have higher magnitude will more than "eliminate" the forecast errors with small forecast horizons, which are of a smaller magnitude. If however a researcher uses the average excess error for each forecast horizon, the problem with the inequality of the forecast errors according to the horizon of the forecasts will be eliminated.

Therefore, to overcome the first problem instead of using the average forecast errors in each month we use the average excess error in each month. To find the average excess error in a particular month for a particular forecast horizon, we remove from the average forecast error made in that month the average error made for IPOs during the first year of their public life with the same forecast horizon. For example, from the average forecast errors of January 1987, made for IPOs with an horizon of 1 month we remove the average forecast error made for all IPOs during their first public year with one month forecast horizon. From the forecast errors made for IPOs for January 1987 with a 12 month forecast horizon we remove the average forecast error made for all IPOs during the first public year with a 12 month forecast horizon. Therefore, instead of having 12 series from January 1987 to December 1996 with the average forecast errors one for each forecast horizon, we have 12 series from January 1987 to December 1996 with the average excess forecast errors one for each forecast horizon.

The second problem is that the number of forecasts available every month vary according to the number of forecast horizons. For example, due to the fact that

[18] we use the average of the previous 12 months to be sure that there are forecasts made for the IPOs in their first public year available. Using a shorter period results to some months having no value for the average error made for the IPOs during their first public life.

[19] The first year (1986) is dropped because the independent variables (previous 12 month average) would not have contained all the 12 months.

most firms announce their earnings in the first quarter of the year, in December there is a large number of forecasts with 3, 4 and 5 months forecast horizons and a few forecasts with forecast horizons of 10, 11 and 12 months. To overcome this problem when we average the average error of all forecast horizons we give equal weight in each forecast horizon. So for example, suppose that in a given month we have 5 forecasts with forecast horizons from 1 to 6 months and each one of them having am average forecast errors of -0.001 and 20 forecasts with forecast horizons from 7 to 12 months and each one of them having an average forecast errors of -0.002. We calculate the average error in that given month as the average of the average of each forecast horizons[i] that is -0.0015 and not as the weighted average of all forecasts[ii] which would have given an error of -0.0018. Therefore instead of using 12 different regression one for each forecast horizon we use the average of all forecast horizons excess forecast error.

In order to reject the null hypothesis that there is no significant relation between the magnitude of analysts forecast errors and the IPO volume in favour of the alternative hypothesis of a significant negative relation between the forecast errors and the volume of IPOs we regress the amount of capital raised from IPOs in real terms per month(prices Dec 1996 excluding privatisations) against the average of all forecast horizons excess forecast errors (both adjusted and unadjusted) analysts made for IPOs during their first public year in forecasting their current year earnings that came into the market in the previous 12 months. It is a time series regression using monthly data starting from January 1988 to December 1996. We also use as an independent variable the average of all forecast horizons excess forecast error analyst made for the whole I/B/E/S sample in the previous 12 months (excluding the 1% outliers). Managers may time the IPO not only to take advantage of analysts' earnings optimism for recent issuers but may also be looking at the whole market earnings' optimism. The results are in table 8.8. We employ the Newey -West heteroscedasticity consistent covariance method. Since, the distribution of the IPO proceeds per month is not normally distributed we use the log transformed values which are normally distributed with a Jarque-Bera value 3.04, a value which rejects the hypothesis of not normality even at 20% level. Ordinary least squares and TOBIT regression were also run with no qualitative differences.[21]

Our results indicate that a significant relation between forecast errors and IPO volume exists. The coefficient of the adjusted excess forecast error made for the recent IPOs is negative and highly significant with a test statistic of -4.5. The coefficient of Unadjusted excess forecast errors is also negative and highly significant with a test statistic of -5.2. In contrast with the forecast errors made for recent IPOs, the magnitude of the forecast errors made for the whole I/B/E/S sample does not affect the IPO volume. The coefficients of the whole market error is negative but not significant. In regression number 4 we use as independent variables both the unadjusted forecast error made for recent IPOs and the error made for the whole I/B/E/S sample and we see that only the coefficient for the errors made for the recent IPOs is significant. The whole market earnings overoptimism is not significant. The adjusted R^2 in the regressions that have as independent variables the adjusted and unadjusted forecast errors made for the recent IPOs are around 20% which mean that the results are economically significant as well as statistically significant.

TABLE 8.8: MONTHLY TIME SERIES REGRESSION OF IPO PROCEEDS AGAINST FORECAST ERRORS JANUARY 1988 TO DECEMBER 1996

The regressions we run had the following format:

Log(IPO PROCEEDS)= α_0 + α_1***Log(1+IPO Error adjusted)*** + α_2***Log(1+Errors made for IPOs Unadjusted)***+ α_3***Log(1+Errors made for the whole market)***

	Constant	Errors Made for Recent IPOs (Adjusted)	Errors Made for Recent IPOs (Unadjusted)	Errors made for the Whole Market	R^2 adjusted
1	4.633 *21.470*	-105.600 *-4.555*			17.5%
2	4.482 *21.713*		-131.088 *-5.201*		21.8%
3	4.604 *17.567*			-4.643 *-0.675*	-0.4%
4	4.478 *21.509*		-130.118 *-5.200*	-2.416 *-0.400*	21.1%

[21] Rajan and Servaes (1998)used TOBIT regressions. TOBIT regressions correct the standard errors of the coefficients and in our regressions increased the significance of the test statistics. We opted however to report the results with the least significant coefficients. We also have run TOBIT regressions and regressions with the COCHRANE-ORCUTT method to correct for serial correlation of the errors without any qualitative difference of the results

The above regressions are monthly time series regressions. To calculate the independent variables first we calculated the adjusted and unadjusted forecast errors analysts made for IPOs during their first public year and the forecast errors analysts made for all firms covered by I/B/E/S (excluding the 1% at the 2 tails) in each month from January 1987 to December 1996 according to the forecast horizons and created 3 groups (one for the unadjusted errors, one for the adjusted errors and one for the whole market errors) of 12 monthly time series one for the forecast errors of each forecast horizon.

Following that we calculated for each one of the 3 groups 12 monthly time series with the average excess forecast error one for each forecast horizon. To find the average excess error in a particular month for a particular forecast horizon, we remove from the average forecast error made in that particular month for that particular forecast horizon the average forecast error made for all IPOs from 1987 to 1996 during the first year of their public life and had that particular forecast horizon.

Instead of having 12 monthly time series regressions, one for each forecast horizon we opted to use only one where the dependent variable is the monthly time series of the average of the average excess forecast errors of all the 12 forecast horizons. We gave equal weight in each forecast horizon in the averaging process.

We use three different independent variable The unadjusted excess forecast errors made for the IPOs during the first year of the life of the IPO that came into the market in the previous year. The adjusted excess forecast errors made for the IPOs during the first year of the life of the IPO that came into the market in the previous year. The excess forecast errors made for the whole market for all firms covered by I/B/E/S (excluding the 1% outliers in the two tails) during the previous year. The adjusted forecast errors made for the IPOs are calculated by subtracting from the unadjusted errors, the average forecast errors analysts made for the firms in the same industry as the IPO firm and similar market value(same quartile) as the IPO firm and in the same year as the unadjusted error was made. T-Statistics are below the coefficients

We find that the magnitude of financial analysts' optimism for the recent IPO has a significant effect on the timing of IPO activity. More capital is raised from Initial Public Offers in the current month when analysts were making larger (more negative) unadjusted forecast errors or smaller (less positive) adjusted forecast errors for the IPOs that came in the market in the previous year. Our results for the whole market errors indicate that general market overoptimism is not significant in affecting the IPO activity.

We also run time series regressions where the dependent variable was the amount of capital raised from IPO per quarter instead of the amount raised per month. As independent variables we used the same as with the monthly regressions but instead of using the average errors of the previous year as we did in table 8.8 we use the average error of the previous quarter. The results were qualitative similar with the monthly regressions. Adjusted errors made for the IPOs that went public in the previous term were negatively and significantly related with the IPO activity in the current term. Unadjusted errors were also negatively and significantly related with the IPO activity while market errors had no effect at all.

These findings suggest that IPO volume may be at least partially driven by analysts' optimism. There are periods where analysts become more optimistic about the earnings potential of the firms that recently went into the market. Other firms seem to seizure that overoptimism and decide to go public when analysts are more optimistic about the earnings of other recent IPOs. We have to stress however that these errors are calculated ex post. These ex-post errors however are a measure of the market sentiment. To the degree that analysts forecasts reflect or even influence investors behaviour, we find that IPO firms seem to be able to go public when there is a feeling of overoptimism in the market about the earnings' potential of recent IPOs.

8.5.FORECAST ERRORS MADE FOR RIGHTS ISSUERS AND THE BUSINESS CYCLE.

Our results indicate that more capital is raised from IPOs as analysts make more overoptimistic forecasts for the recent IPOs or less pessimistic forecasts on an adjusted basis. As we have showed however in figure 8.4, analysts' overoptimism for the earnings of all firm covered by I/B/E/S varies across time and reached a peak at 1991- 1992, a period when the UK economy experienced a recession. Chopra (1998) finds a negative relation between forecast errors and the growth in industrial production arguing that when economic growth is strong, earnings rise and they approach the analysts' overoptimistic forecasts thus resulting to a smaller forecast error. In periods when economic activity declines, earnings decline and analysts' do not reduce their estimates enough to take into account the effect of the deterioration in the economy on firms' earnings causing larger forecast errors. Berry & Dreman (1995) however report that the average earnings surprise does not differ between upturns and downturns of the business cycle. We find that forecast errors differ significantly from the expansion to the recession. (the classification of the expansion and recession was made according to the coincident indicator). Analysts make larger mistakes in forecasting earnings when the forecast is made during a recession. In table 8.9 we report the average forecast errors across upturns and downturns. For example, the average forecast error made in an expansion for all firms in the I/B/E/S database (excluding 1% at the two tails) with a 6 month forecast horizon is -0.09 and it becomes -0.0124 during the recessions which is significantly more negative with a test statistic of -3.20. The 12 month forecast horizon average error made in the upturn is half the error made in the downturn, -0.0125 and -0.0263 respectively. The difference between the average errors in recessions and expansions is statistically significant for 10 out of the 12 forecast horizons. The average forecast error of all forecast horizons made during the upturn of the business cycle is -0.008891 while the average forecast error of all forecast horizons made during the downturn of the business cycle is -0.013137 which is significantly more negative than the average error made during the upturn with a test statistic of -3.14.

The comparison of forecast errors for the whole market across upturns and downturns however does not reveal the whole story. A more clear picture can be drown from looking at the forecast errors across the whole duration of the cycle. We have split each upturn and each downturn into three equal length periods. In figure 8.7 we have plotted the average forecast errors made for the whole market for 3 forecast horizons across these 6 sub-periods of the business cycle. We find that the average forecast errors are at the most negative values during the first part of the expansion (upturn 1) and the middle and last part of the recession (downturn 2 and 3). The average forecast error with a 6 month horizon was -0.0197 during the first part of the upturn and -0.0080 and -0.0042 during the middle and last part of the expansion. The average error with a 6 month forecast horizon is -0.0080 in the first part of the recession and -0.0146 at the second and third part of the recession. The smaller (less negative) forecast errors were made during the period before the peak of the cycle. The errors are recorded according to the month the forecast is made. It seems that analysts are more accurate in their predictions during the middle and late stages of the expansion but become inaccurate as the economy enters the recessions. Especially during the middle and last stages of the recessions they overestimate the earnings by higher degrees. Analysts seem that they can not estimate the earnings with great accuracy when the economic situation is deteriorating. It looks as if analysts can not foresee the "depth" of the recession. The forecasts they make during the last two stages of the recession are more overoptimistic. Probably they can not estimate the true effect of the recession on the firms' earnings or believe that the upward turning point and the subsequent improvement in firms earnings will start earlier in time. Even when the economy starts to pick up analysts seem to expect too much too soon from firms' earnings. Their forecast are overoptimistic in the first part of the recession but again firms do not live up to analysts expectations.

TABLE 8.9: AVERAGE FINANCIAL ANALYSTS' EARNINGS FORECAST ERRORS ACROSS THE UPTURN AND DOWNTURN OF THE BUSINESS CYCLE

Analysts average earnings forecast Errors made all the firms in the market covered by I/B/E/S ***(Excluding 1% at the two tails)***

	Average forecast error made during the UPTURN of the Business Cycle	Average forecast error made during the DOWNTURN of the Business Cycle	T- stats of difference between downturn and upturn
Forecast Horizon 1 month	-0.0036 (3484)[1]	-0.0045 (5181)	-1.39
Forecast Horizon 2 months	-0.0055 (3359)	-0.0056 (5122)	-0.13
Forecast Horizon 3 months	-0.0062 (3287)	-0.0071 (5292)	-1.03
Forecast Horizon 4 months	-0.0065 (3239)	-0.0087 (5739)	-2.38
Forecast Horizon 5 months	-0.0082 (3236)	-0.0104 (5255)	-2.13
Forecast Horizon 6 months	-0.009 (3228)	-0.0124 (5179)	-3.20
Forecast Horizon 7 months	-0.0104 (3368)	-0.0145 (5006)	-3.75
Forecast Horizon 8 months	-0.0113 (3447)	-0.0172 (4777)	-5.08
Forecast Horizon 9 months	-0.0113 (3527)	-0.0189 (4510)	-6.41
Forecast Horizon 10 months	-0.0119 (3457)	-0.0207 (4262)	-7.03
Forecast Horizon 11 months	-0.0118 (3065)	-0.0216 (3981)	-7.64
Forecast Horizon 12 months	-0.0125 (2103)	-0.0263 (2931)	-7.63
Average of all forecast horizons	-0.008891 (38800)	-0.013137 (56875)	-3.14

Analysts average unadjusted earnings forecast Errors made for IPO firms in the first year of their public life

	Average forecast error made during the UPTURN of the Business Cycle	Average forecast error made during the DOWNTURN of the Business Cycle	T- stats of difference between downturn and upturn
Forecast Horizon 1 months	-0.0015 (63)	0.00059 (74)	0.83
Forecast Horizon 2 months	0.00066 (79)	0.0009 (85)	0.12
Forecast Horizon 3 months	0.00159 (86)	-0.0003 (95)	-0.81
Forecast Horizon 4 months	0.00222 (86)	-0.0007 (93)	-1.24
Forecast Horizon 5 months	0.00016 (94)	0.00228 (79)	1.10
Forecast Horizon 6 months	-0.0005 (88)	-0.0002 (74)	0.11
Forecast Horizon 7 months	-0.0006 (95)	-0.0022 (63)	-0.59
Forecast Horizon 8 months	-0.002 (93)	-0.0005 (67)	0.53
Forecast Horizon 9 months	-0.0004 (101)	0.0005 (52)	0.32
Forecast Horizon 10 months	-0.0025 (85)	-0.0016(54)	0.24
Forecast Horizon 11 months	-0.0042 (69)	-0.0077 (56)	-0.63
Forecast Horizon 12 months	-0.0069 (44)	-0.0127 (36)	-0.57
Average of all forecast horizons	-0.000857 (983)	-0.00112 (828)	-0.33

[1] the number of observations differs from those in table 2 because our classification of the business cycle stops at 1996. Table 2 includes forecasts made in 1997 and 1998 as well.

Analysts' average adjusted earnings forecast Errors made for IPO firms in the first year of their public life

	Average forecast error made during the UPTURN of the Business Cycle	Average forecast error made during the DOWNTURN of the Business Cycle	T- stats of difference between downturn and upturn
Forecast Horizon 1 months	-0.0004 (44)	0.0057 (54)	1.63
Forecast Horizon 2 months	0.0039 (73)	0.0070 (85)	1.40
Forecast Horizon 3 months	0.0061 (81)	0.0071 (95)	0.38
Forecast Horizon 4 months	0.0070 (81)	0.0073 (93)	0.13
Forecast Horizon 5 months	0.0083 (89)	0.0113 (79)	1.12
Forecast Horizon 6 months	0.0087 (85)	0.0111 (74)	0.81
Forecast Horizon 7 months	0.0096 (91)	0.0106 (63)	0.34
Forecast Horizon 8 months	0.0121 (90)	0.0133 (67)	0.34
Forecast Horizon 9 months	0.0108 (98)	0.0143 (52)	1.07
Forecast Horizon 10 months	0.0092 (84)	0.0146 (54)	1.64
Forecast Horizon 11 months	0.0095 (69)	0.0103 (56)	0.14
Forecast Horizon 12 months	0.0095 (44)	0.0129 (36)	0.33
Average of all forecast horizons	0.008255 (929)	0.010029 (808)	0.35

1. In parentheses we have the number of forecast errors

However, the errors made for the recent IPOs, both adjusted and unadjusted, do not exhibit the same cyclical pattern as the errors for the errors for the whole market do. This is something that could be expected in the case of adjusted errors because these errors have the "cyclical element" removed from them. These errors are adjusted by removing the average error made by analysts in forecasting the earnings of firms in the same industry, same market value quartile and at the same time. Even the unadjusted IPO errors however do not differ between expansions and recessions. For example the 6 month forecast horizon adjusted error made in the first year of their life is 0.0087 during the upturn and 0.0111 during the downturn of the cycle. The average adjusted forecast error of all forecast horizons made for IPOs during the upturn of the business cycle is 0.008255 while the average adjusted forecast error of all forecast horizons made for IPOs during the downturn of the business cycle is 0.010029 which not different from the average error made during the upturn with a test statistic of 0.35. The unadjusted forecast error for the same 6 month horizon is -0.0005 and -0.0002 respectively for the upturn and downturn. The average unadjusted forecast error of all forecast horizons made for IPOs during the upturn of the business cycle is -0.000857 while the average adjusted forecast error of all forecast horizons made for IPOs during the downturn of the business cycle is -0.00112 which not different from the average error made during the upturn with a test statistic of -0.33.The number of IPO adjusted and unadjusted forecast errors however is much smaller than the number of forecasts available for the whole market. We have 44 to 101 forecasts at the most (depending on the forecast horizon) made for IPO in their first year of their life during upturns and 36 to 93 forecasts made during downturns. For the whole market errors however the size of the sample is very large relative to the size of the IPO sample with the number of observations ranging from 2103 up to 5739. Obviously when we compare the errors across upturns and downturns of the cycle, the power of the statistical tests is smaller in the case of the IPOs due to the smaller number of observations.

Our findings that more capital is raised from IPOs in periods when overoptimism for the recent IPOs is high or pessimism is low, do not suggest that more capital is raised from IPOs during recessions, because unadjusted errors made for IPOs are not more negative during recessions and adjusted errors made for IPOs are not smaller during recessions as the table above indicates.

Overall we find that the magnitude of financial analysts earnings forecast errors has a significant effect on the timing of Initial Public Offerings. Periods when analysts earnings optimism for the recent IPOs is high are periods when more capital is raised from Initial Public offers. We find a negative and statistically significant relation between the magnitude of forecast errors and monthly IPO volume suggesting that as errors decrease (become more negative or less positive) the IPO volume increases.

8.6.Initial Public offers and Earnings Forecast Revisions

The results in the previous section indicate that firms time their Initial Public Offers when analysts overoptimism for the earnings of firms that went public in the previous year is high or when pessimism is low. More capital is raised from IPOs when analysts are more overoptimistic for the earnings of recent IPOs. There may be however another factor that could have a significant effect on the timing of IPOs and that is the analysts optimism for the earnings of the particular company that is about to be listed on the stock market.

A firm may time its IPOs during a peak of their operating performance. Firms may find that there is an opportunity to go public when they have reached the peak of their profitability. Previous studies produce evidence that issuers have an improvement in their operating performances before the IPO while in the post-IPO years their operating performances deteriorates. If issuers time the IPO at the peak of their profitability then analyst should revise downwards their earnings' forecasts as soon as they realise that their earnings' expectations can not be materialised.

To see whether managers time their Initial Public offer at the peak of their earnings, we examine financial analysts forecast revisions for 384 Initial Public offers made with the method of offer for sale, offer for subscription or placing in the period 1987 to 1996. The forecast revision shows how analysts change their forecasts from one month to the other. If managers time the IPO at the peak of their earnings then at the time of the IPO, the forecasted earnings per share should be high. If the IPO was made at the peak of the profitability then after the IPO earnings would start to drop and we should find that analysts revise downwards their earnings forecasts as soon as the arrival of new information makes them realise that the high level of earnings at which the IPO has entered the market can not be sustained.

To provide support to the argument that managers time the IPO at peaks of their earnings we will have to reject the null hypothesis of no significant negative forecast revision of IPO earnings after the listing in favour of the alternative hypothesis of a significant negative revision of analysts earnings forecasts after the IPO.

Ho: Financial analysts do not revise their forecasted earnings for IPO firms after the listing.

He: Financial analysts revise downwards their forecasted earnings for IPO firms after the listing.

To reject the null hypothesis we should find that analysts forecast revisions should be significantly negative after the listing of the firm. That would indicate that analysts downgrade their forecasts for the IPO after the listing and so managers could have timed the IPO prior to a deterioration of earnings. The monthly forecast revision ($FR_{i,t}$) at month *t* for firms *i* is calculated as follows:

$$FR_{i,t} = \frac{F_{i,t} - F_{i,t-1}}{P^*}$$

$F_{i,t}$ is the consensus analysts earnings forecasts for firm *i* at month *t* and $F_{i,t-1}$ is the consensus analysts earnings forecasts for the same firm at month *t-1*. P* is the offer price of the IPO and is used to normalise the forecasts by the share price. More details on how the forecast revisions are calculated are in section 4.6

Table 8.10 presents the average forecast revision of IPO earnings from month 1 to month 60. The pattern we find is that analysts revise upwards their earnings forecasts for the IPOs from the second to the fourth month from their listing .

TABLE 8.10: AVERAGE FINANCIAL ANALYSTS' NORMAL FORECAST REVISIONS FOR FIRMS CONDUCTING INITIAL PUBLIC OFFERS

Month from the Listing	Average Forecast Revision	N	t statistic of difference from zero	percentage of positive forecast revisions	percentage of zero forecast revisions	percentage of negative forecast revisions	t stats for difference between negative and positive percentages (positive t stats indicates more negative than positive
1	-0.00028	5	-6.88	0.00	0.80	0.20	#N/A
2	0.00118	34	2.58	0.24	0.59	0.18	-0.52
3	0.00171	81	3.65	0.32	0.53	0.15	-2.28
4	0.00118	108	2.72	0.29	0.59	0.12	-2.44
5	-0.00144	141	-1.01	0.24	0.60	0.16	-1.38
6	-0.00135	147	-1.73	0.26	0.57	0.17	-1.60
7	0.00103	170	1.55	0.26	0.59	0.15	-2.12
8	-0.00070	196	-1.89	0.19	0.58	0.22	0.70
9	-0.00026	215	-1.11	0.18	0.67	0.15	-0.51
10	-0.00065	229	-1.53	0.21	0.61	0.18	-0.81
11	0.00000	234	0.01	0.24	0.57	0.19	-1.30
12	0.00062	237	1.35	0.23	0.62	0.16	-1.63
13	-0.00036	229	-0.69	0.21	0.63	0.16	-0.99
14	-0.00089	249	-1.46	0.18	0.66	0.16	-0.48
15	-0.00007	278	-0.21	0.19	0.64	0.17	-0.37
16	-0.00011	279	-0.23	0.20	0.59	0.21	0.29
17	-0.00160	270	-1.58	0.22	0.55	0.23	0.40

Table 8.10 is continued next page

Table 8.10, continued from previous page

Month from the Listing	Average Forecast Revision	N	test statistic of difference from zero	percentage of positive forecast revisions	percentage of zero forecast revisions	percentage of negative forecast revisions	t stats for difference between negative and positive percentages (positive t stats indicates more negative than positive
18	-0.00149	279	-1.94	0.19	0.57	0.24	1.19
19	-0.00145	274	-2.19	0.15	0.62	0.24	2.65
20	-0.00080	298	-1.19	0.15	0.64	0.21	1.54
21	-0.00157	302	-2.89	0.16	0.64	0.20	1.13
22	-0.00103	290	-1.14	0.14	0.63	0.22	2.33
23	-0.00095	289	-1.28	0.17	0.60	0.24	2.00
24	0.00018	264	0.38	0.22	0.57	0.21	-0.20
25	-0.00153	251	-1.31	0.19	0.57	0.24	1.15
26	-0.00211	275	-1.33	0.17	0.60	0.23	1.84
27	-0.00067	263	-1.98	0.14	0.66	0.21	1.89
28	-0.00099	264	-1.96	0.20	0.58	0.22	0.40
29	-0.00077	272	-0.77	0.20	0.54	0.26	1.64
30	-0.00124	260	-1.62	0.21	0.57	0.22	0.20
31	-0.00497	253	-1.49	0.21	0.53	0.26	1.16
32	-0.00094	250	-1.67	0.20	0.54	0.26	1.72
33	-0.00071	264	-1.53	0.16	0.57	0.27	2.94
34	-0.00279	264	-1.78	0.17	0.58	0.25	2.23
35	-0.00302	246	-2.07	0.17	0.55	0.28	2.82
36	-0.00333	220	-1.99	0.17	0.55	0.28	2.89
37	-0.00281	203	-2.44	0.20	0.50	0.30	2.34
38	-0.00200	221	-2.84	0.21	0.50	0.29	1.98
39	-0.00056	230	-1.30	0.13	0.64	0.23	2.57
40	-0.00211	242	-1.61	0.13	0.57	0.29	4.83
41	-0.00150	240	-2.07	0.20	0.53	0.27	1.77
42	-0.00466	235	-1.77	0.18	0.53	0.29	3.03
43	-0.00065	235	-0.54	0.18	0.53	0.29	3.16
44	-0.00156	220	-2.18	0.22	0.56	0.22	-0.11
45	-0.00183	239	-1.93	0.14	0.58	0.28	4.12
46	-0.00198	252	-2.16	0.20	0.52	0.28	2.18
47	-0.00264	240	-1.11	0.20	0.51	0.30	2.74
48	-0.00239	225	-2.66	0.18	0.48	0.34	4.65
49	-0.00207	203	-1.89	0.22	0.51	0.28	1.43
50	-0.00114	202	-1.37	0.20	0.52	0.28	1.82
51	-0.00243	206	-2.34	0.17	0.58	0.25	2.18
52	-0.00327	217	-3.87	0.13	0.58	0.29	4.75
53	-0.00160	224	-1.75	0.20	0.56	0.25	1.23
54	-0.00105	214	-0.86	0.13	0.66	0.21	2.28
55	-0.00222	211	-1.34	0.20	0.50	0.30	2.55
56	-0.00228	199	-2.10	0.18	0.54	0.28	2.50
57	-0.00224	219	-1.73	0.16	0.55	0.28	3.17
58	-0.00264	214	-1.29	0.15	0.56	0.29	3.51
59	-0.00182	212	-1.31	0.19	0.54	0.27	1.89
60	-0.00326	206	-1.03	0.16	0.60	0.24	1.92

During the first 12 months, we have 4 months where the average analysts normal forecast revisions are significantly positive, for three months the forecast revision is significantly negative and for 4 months the average forecast revision is not statistically different from zero. In the second year however we have 5 months with significant negative forecast revisions and 7 months when the forecast revisions are negative but not different from zero at 10 % level of statistical significance one tail tests. During the third and fourth year, 18 out of the 24 months are characterised by significant negative forecast revisions. The remaining 6 months are not different from zero even though revisions are still negative. In the fifth year, 6 of the monthly forecast revisions are negative and significantly different from zero and six are negative but insignificant. Overall, analysts revise upwards their earnings forecasts for IPOs in the first 4 months and from that point onwards they start to revise downwards their earnings forecasts.

In Figure 8.8 we have plotted the financial analysts normal forecast revisions (equally and price weighted). The forecast revisions is represented by the change from one month to the other. The average forecast increases slightly in the first 4 months but after that point there is a downward trend in forecast revisions. There is no significant difference between the equally weighted and the price weighted normal forecast revisions. The price weighted forecast revisions are slightly less negative but overall the conclusions do not change. Analysts normal forecast revisions are negative after the first 4 months of the IPO.

As we had argued however in chapter 4, the forecast revision is not the best measure of analysts view of IPO earnings as this does not take into account the fact that analysts revise downwards their forecasts for all firms as they approach the announcement of the earnings. Analysts' expected forecast revision is not zero. Analysts are overoptimistic when they make their forecasts and as time passes by, they revise downwards their forecasts. In other words, the forecast revisions have a negative drift which has to be taken into account. Analysts revise downwards their forecasts after the IPO but we do not know which part of this revision is due to the arrival of new pieces of information which show that analysts initial forecast for the IPOs were too high and which part of the revisions is caused by the negative drift, the usual correction of the earnings made for all firms as the announcement of the earnings approaches. The negative forecast revision is likely to be caused by the fact that analysts revise their forecast downwards as the announcement of the earnings approach and not due to new pieces of information with regards to the IPOs. A more appropriate measure of analysts behaviour is the abnormal forecast revisions because these revisions take into account the negative drift. For details on how the abnormal forecasts are calculated see section 4.6.

In table 8.11, we present the Analysts Earnings *Abnormal* forecast revisions for IPOs from month 1 to month 60. We find that analysts, in true terms, revise upwards their forecast for the IPOs for the first 2.5 years. In the first year, all 12 months are characterised by positive abnormal forecast revisions and for 11 out of the 12 months the abnormal forecasts revisions are significantly different from zero. In the second year, 9 out of the 12 abnormal forecast revisions are significantly positive. The remaining 3 months are characterised by positive but not significantly different form zero abnormal forecast revisions. Up until month 30, we predominantly see positive and significant abnormal forecast revisions. 24 months have significant positive abnormal forecast revisions. From that month onwards, most of the months are characterised by insignificant different from zero abnormal forecast revisions. From month 31 onwards and up to month 60, 22 of the months have negative abnormal forecast revisions but only 4 are significant from zero. Results for price weighted abnormal forecast revisions were qualitative similar. (See figure 8.9) The only difference to the price weighted abnormal forecast revisions is that the upwards forecast revision is of a smaller magnitude but still the same conclusions are drawn. Analysts abnormal forecast revisions are significantly positive until the middle of the third year and from that point onwards abnormal forecasts are negative but insignificant form zero.

TABLE 8.11: AVERAGE FINANCIAL ANALYSTS' ABNORMAL EARNINGS FORECAST REVISIONS FOR IPOs

Month from the listing	Average Abnormal Forecast Revisions	N	T statistic of difference from zero	percentage of positive abnormal forecast revisions	percentage of zero abnormal forecast revisions	percentage of negative abnormal forecast revisions	t stats for difference between negative and positive percentages (positive t stats indicates more negative than positive
1	0.00142	5	1.29	0.60	0.00	0.40	-0.91
2	0.00216	34	1.74*	0.71	0.03	0.26	-5.56
3	0.00452	83	4.17***	0.80	0.01	0.19	-13.52
4	0.00679	111	3.46***	0.73	0.01	0.26	-11.06
5	0.00403	141	2.01**	0.72	0.01	0.26	-12.15
6	0.00332	146	1.47*	0.77	0.01	0.22	-15.97
7	0.0049	170	4.40***	0.78	0.01	0.21	-17.98
8	0.0032	195	2.95***	0.70	0.01	0.29	-12.50
9	0.00358	214	3.69***	0.69	0.00	0.31	-11.91
10	0.00344	228	3.59***	0.69	0.00	0.30	-12.75
11	0.00396	231	3.10***	0.68	0.01	0.31	-12.26
12	0.00392	234	4.23***	0.69	0.00	0.30	-12.86
13	0.00441	226	3.76***	0.65	0.00	0.34	-9.91
14	0.00275	248	2.71***	0.65	0.01	0.33	-10.48
15	0.00356	277	4.61***	0.65	0.01	0.35	-10.39
16	0.00432	276	4.79***	0.65	0.01	0.34	-10.83
17	0.00209	267	2.15***	0.64	0.00	0.35	-9.95
18	0.00111	277	1.31*	0.61	0.01	0.38	-7.99
19	0.00044	272	0.51	0.57	0.01	0.42	-4.75
20	0.00136	295	1.65*	0.58	0.01	0.41	-5.97
21	0.00123	299	1.37*	0.59	0.01	0.40	-6.41
22	0.0012	287	1.19	0.59	0.01	0.40	-6.31
23	0.00096	287	1.02	0.57	0.02	0.41	-5.68
24	0.00246	260	2.94***	0.58	0.00	0.42	-5.39
25	0.00033	246	0.26	0.55	0.01	0.44	-3.32
26	-0.0003	273	-0.19	0.56	0.00	0.43	-4.39
27	0.00245	263	2.31***	0.60	0.00	0.40	-6.52
28	0.0026	264	2.68***	0.63	0.00	0.37	-8.94
29	0.00238	272	2.17***	0.63	0.00	0.37	-8.78
30	0.00152	259	1.50*	0.61	0.00	0.39	-7.26
31	-0.002	252	-0.63	0.61	0.00	0.38	-7.35
32	0.00119	249	1.06	0.59	0.00	0.41	-6.07
33	0.00061	262	0.62	0.58	0.00	0.42	-5.51
34	-0.0015	262	-0.88	0.56	0.00	0.44	-3.98
35	-0.0021	246	-1.24	0.52	0.00	0.48	-1.53
36	-0.002	221	-1.03	0.53	0.00	0.47	-1.88
37	-0.0022	204	-1.56*	0.51	0.00	0.49	-0.56
38	-0.0024	220	-2.00**	0.48	0.00	0.52	1.35
39	0.00071	228	0.54	0.50	0.00	0.50	-0.26
40	0.00049	243	0.29	0.53	0.00	0.47	-1.67
41	0.0007	241	0.75	0.54	0.00	0.46	-2.46
42	-0.0027	234	-1.07	0.54	0.00	0.46	-2.62

Table 8.11 continues next page

table 811 continue from previous page							
Month from the listing	Average Abnormal Forecast Revisions	N	T statistic of difference from zero	percentage of positive abnormal forecast revisions	percentage of zero abnormal forecast revisions	percentage of negative abnormal forecast revisions	t stats for difference between negative and positive percentages (positive t stts indicates more negative than positive
43	0.00148	234	1.11	0.56	0.00	0.44	-3.69
44	0.00089	219	0.84	0.54	0.00	0.46	-2.58
45	-0.0004	237	-0.28	0.50	0.00	0.50	-0.13
46	-0.0008	251	-0.60	0.52	0.00	0.48	-1.39
47	-0.0001	239	-0.06	0.51	0.00	0.49	-0.39
48	-0.0013	225	-0.92	0.51	0.00	0.49	-0.67
49	-0.0004	204	-0.23	0.55	0.00	0.45	-3.10
50	0.00041	201	0.31	0.54	0.00	0.46	-2.41
51	-0.0004	206	-0.24	0.53	0.00	0.47	-1.68
52	-0.0013	216	-0.95	0.46	0.01	0.53	2.03
53	-0.0012	223	-0.86	0.56	0.01	0.43	-3.62
54	-0.0008	213	-0.59	0.52	0.01	0.46	-1.63
55	-0.0018	210	-1.27	0.52	0.00	0.48	-1.24
56	-0.0017	197	-1.24	0.49	0.02	0.50	0.28
57	-0.0015	217	-1.18	0.51	0.01	0.47	-1.08
58	-0.002	214	-1.26	0.47	0.01	0.52	1.64
59	-0.0025	213	-2.15**	0.45	0.01	0.54	2.46
60	-0.0034	206	-2.02**	0.46	0.02	0.52	1.80

Figure 8.9 presents the equally weighted and price weighted abnormal forecast revisions. The abnormal forecast revisions is the change from one month to the other. The path shows an increase until around month 33. From that point onwards there is a downwards slope in the abnormal forecast revisions but not as steep as the increase observed from month 1 to 33.

In general, we find that analysts revise upwards their earnings forecasts, in true terms, during the first 2.5 years of the life of the IPO but after that period, they start to revise downwards their earnings expectations but not significantly so. These results indicate that IPO managers do not time their equity issue around periods when analysts earnings forecasts are at levels that managers, using the inside information they have, consider to be the peak of their earnings performance. Analysts continue to revise upwards the IPO earnings even after the listing. There is however a significant difference in the magnitude of the revision. During the first 12 months, the cumulative abnormal forecast revision is 4.5%. For the following 12 months the cumulative abnormal forecast revision is 2.6% and becomes only 0.3% in the 3 year. That indicates that even though analysts revise upwards their earnings in the first 2.5 years the magnitude of the revision is much higher in the 1st year.

Overall the results from the analysis of the forecast revisions reveal that IPOs do not time their offer in periods when analysts forecast a peak in their earnings. IPOs earnings continue to grow even after the listing at a considerable degree. The cumulative abnormal forecast revision for the IPO is 8% during the first 30 months and it is -2.8% in the months 31 to 60. That leads us to conclude that managers time their IPOs during or at the beginning of a period of growth and not at the peak of their earnings growth. The results however may be sample specific especially if the choice made by analysts as to what IPOs they are going to cover is affected by the forecasted growth. Analyst may choose to provide forecasts only for IPOs for which the growth potentials are high and avoid IPOs with limited growth potentials.

8.7. ACTUAL GROWTH IN EARNINGS PER SHARE FOR IPOs

Studies have found that the earnings of IPOs decrease in the years after the listing ,Jain & Kini (1994), Mikkelson & Shah (1994). Such a result would be in contrast with our findings that analysts revise upwards their forecasts (in true terms) for the UK IPOs. We look at the growth in reported earnings of the IPOs and their behaviour after the listing to see whether the deterioration of profitability found in the US IPOs is also present in UK IPOs as well . We computed the growth of reported earnings from the previous year for each of the first 5 years from the listing. Table 8.12 reports the results. We find that the IPOs that had a fiscal year end in year 1 after the IPO had an average 13.2% increase (median 30.4 %) in their earnings relative to the previous year, the pre-IPO year. (The month of the fiscal year end is used to find in which year to put the growth in earnings and not the month of the announcement of the earnings. E.g. If an IPO has a fiscal year-end in month 11 after the IPO but the earnings are announced in month 15 then the growth in EPS is regarded that has taken place in year 1). The size of the sample of the IPOs for which we were able to estimate the growth in their earnings in the first year is very small because little data for pre-IPO earnings are available.

The growth in EPS was 14.9% in the second year (median 15.0%) or 11.4% if the outliers (those with growth rates higher or below 2 standard deviations form the mean) are removed. The IPOs had a growth in their earnings of 8.5%in the third year (10.5 % with no outliers). The growth of IPOs earnings continued to decrease in the fourth year where the growth was 7.6% (only 6.3% with no outliers). Finally, the Earnings per share of IPOs decreased by 1.1% in the fifth year (increase by 3.4% if we remove the outliers).

TABLE 8.12: EARNINGS GROWTH OF IPOs

PANEL A:
FULL SAMPLE OF IPOs

	1st year	2nd year	3rd year	4th year	5th year
Average Growth in Earnings per Share from previous year	**13.2%**	**14.9%**	**8.5%**	**7.6%**	**-1.1%**
Median Growth in Earnings per Share from previous year	30.4%	15.0%	14.7%	8.9%	9.3%
Number of observations	7	138	285	258	268
Number of firms with positive growth in EPS	5 (71%)	97 (70%)	197 (69%)	166 (64%)	168 (62.6%
zero Number of firms with zero growth in EPS	0	3 (2%)	2 (1%)	4 (1%)	1 (0.4%)
negative Number of firms with negative growth in EPS	2 (29%)	38 (28%)	86 (30%)	88 (34%)	99 (37%)

Panel B
No Outliers Above and Below 2 standard Deviations from the Mean

	1st year	2nd year	3rd year	4th year	5th year
Average Growth in Earnings per Share from previous year	**13.2%**	**11.4%**	**10.5%**	**6.3%**	**3.4%**
Median Growth in Earnings per Share from previous year	30.4%	14.9%	14.9%	08.6%	9.4%
Number of observations	7	133	278	251	253
Number of firms with positive growth in EPS	5 (71%)	94 (71%)	194 (70%)	162 (64%)	161 (63.6%)
Number of firms with zero growth in EPS zero	0	3 (2%)	2 (1%)	4 (1%)	1 (0.4%)
Number of firms with negative growth in EPS	2 (29%)	36 (27%)	82 (29%)	85 (34%)	91 (36%)

The Growth measures are calculated as the change in reported EPS in year t minus the Reported earnings in year t-1 over the EPS in year t-1. Earnings per share are recorded according to the end of the fiscal year and not when the earnings are announced. In parentheses we have the percentage of firms with positive, zero and negative growth in their EPS relative to the previous fiscal year. If we did not have the reported EPS in the previous year, that IPO is dropped from the sample.

The results for the growth in IPOs reported earnings reinforce our findings from the analysis of abnormal forecast revisions. We find that IPOs' earnings continue to increase after the listing and grow more rapidly in the first two years The IPOs earnings growth rate starts to decrease from the third year. IPOs that had a fiscal year end in the first 30 months had an average growth of 15.59% relative to the previous year (median 16.05%) and those IPOs that had a fiscal year end in the months 31 to 60 had an average growth of only 2.31% (median 9.63%) a difference which was statistically significant with a t-statistic of 2.16. The growth was 10.24% in the first 30 months without the outliers over and above 2 standard deviations from the mean and 3.9% in the following 30 months, a difference which was also significant (t stat 1.97).

Our result from the analysis of financial analysts earnings forecast revisions and the growth in reported earnings for IPOs reveals that IPO firms do not time the IPO around the peaks of their profitability. IPO earnings continue to grow after the listing. Further more, analysts continuously revise upwards their earnings forecasts for almost 2.5 years after the listing. We can not support the argument that IPOs time their offer when managers believe that the firm has reached the peak of their profitability. IPO firms continue to increase their earnings at high rates for the first two years of their public life. It looks that managers time their IPO at the beginning or during a period of earnings growth and not at the peak of their profitability.

8.8 CONCLUSIONS

Variation in investors' sentiment in one explanation that has gained empirical support as a driving force behind the time series variation of equity issuance volume. If investors' sentiment affects the IPO activity then a relation between analysts earnings forecasts and IPO volume should exists. This chapter investigated the effect that UK financial analysts' earnings forecasts have on the timing of UK IPOs. We report that financial analysts' earnings forecasts are on average overoptimistic for all firms and that overoptimism varies across time, across industries and is higher for small firms. Analysts however are not overoptimistic for the earnings of IPOs during the first year of their public life. Unadjusted forecast errors made during the first year of their public life are not significantly different from zero while errors adjusted for industry and market value are significantly positive.

We find a significant time series variation in the sign and magnitude of analysts' forecast errors over time. Time series regressions of the amount of capital raised from IPOs revealed a significant relation between IPO activity and analysts' forecast errors. High forecast errors for the earnings of firms that recently went public cause an increase in the IPO activity. We find however that the magnitude of analysts forecast errors made for all the firms in the market does not affect the IPO activity.

Our results indicate that IPO volume is driven at least partially by analysts' overoptimism. As analyst become more overoptimistic about the earnings of the recent IPO, or less pessimistic on an adjusted basis, more capital is raised from IPOs in the current month results which are similar with the results of Rajan & Servaes (1998) for US IPOs.

We also examined how analysts' forecasts behave after the firms have gone public. Previous studies have indicated that IPO firms time the IPO at the peak of their profitability. If firms time the IPO at the peak of their profitability then analysts should revise downwards their forecasts after the IPO. We find that analysts revise upwards their forecast in the first two and a half years of the life of the IPO. The profitability of IPO firms grows by 15.59% relative to the previous year during the first 30 months after the IPO and only 2.31% in the next 30 months. IPO firms do not time the issue at the peak of their profitability at the beginning or during a period of a sustainable earnings growth.

CHAPTER 9:FINANCIAL ANALYSTS EARNINGS FORECASTS AND THE TIMING OF SEASONED EQUITY OFFERINGS

9.1.INTRODUCTION

In the previous chapter we investigated the effect of financial analysts' earnings forecasts on the timing of Initial Public Offerings in the UK. Our results indicate that financial analysts' earnings overoptimism has a significant role in the timing of equity issues. More capital is raised from IPOs when analysts are more overoptimistic for the earnings of recent IPOs. That result indicates that the market sentiment, as expressed by the magnitude of analysts forecast errors, is important in the timing the IPOs.

As we found in chapter 5, the Seasoned equity offering activity in the UK exhibits a significant time series variation. Both the number of firms making a rights issue and the amount of capital raised varies over time. The question however that has not been researched previously is what is the effect of analysts' overoptimism in the timing of Seasoned equity offerings.

Loughran & Ritter (1996) argue that the market sentiment should be important in the timing of Seasoned equity issues as well. Periods when the market is characterised by more favourable sentiment are periods when SEO activity should be higher. During periods of favourable market sentiment share prices are very likely to be higher and analysts should forecast higher level of earnings relative to periods when the market felling is gloomy. In Seasoned Equity offerings where the new shares are offered to the general public, managers who act on behalf of existing shareholders have the incentive to make the issue when the share price is overvalued. In such a case, more capital will be raised with the existing shareholders losing a smaller portion of the firm's ownership to the new shareholders. Under such a scenario, periods when the earnings forecast are overoptimistic are more likely to be periods when prices are above the fundamentals thus creating an environment when seasoned equity capital can be raised in more favourable terms.

As we said in 5th chapter however, the rights issue is a unique method for raising seasoned equity capital because it eliminates managers' incentives to exploit new shareholders in favour of existing ones by selling to them overvalued shares.

Under a rights issue, the new shares is offered first to existing shareholders. They have the *right* to buy the new shares at the prefixed price and terms or to sell their rights at the market. In either ways existing shareholders or managers do not gain or lose anything if the issue price is high. (see endnote 1 for a numerical illustration of this argument). The exploitation of market sentiment and analysts' overoptimism in order to sell to the new shareholders overvalued shares is an explanation that is not plausible as an explanation for the timing of a seasoned equity issue made with the method of the Rights Issue. If managers seek to maximise the existing shareholders' utility, they have no incentive to price the new shares at dearer prices. Existing shareholders will not gain or lose anything if the issue is timed when the share prices are high or low. Therefore, managers that seek to maximise their shareholders' utility have no incentive to time the issue when analysts' overoptimism is high. That is unless, managers place their own satisfaction higher than that of their shareholders. In such a case, managers do have the incentive to issue at higher prices. By issuing at a higher price, they can raise more capital by offering the same number of shares. If managers increase their personal utility by managing a company with largest value of asset or their remuneration packages are linked to the value of the company they manage or its assets' growth we could expect managers to issue equity when the market conditions favour the issuance of capital. If their personal satisfaction is ranked higher than that of their shareholders we could expect that managers time the equity issue when the market sentiment favours the issuance of more capital.

Firms that make a rights issue are under pressure from the underwriters to price the new shares at low prices. If the new issue is priced at a high price then the probability increases that existing investors will not commit their funds to buy the new shares and therefore would prefer to sell their rights to the market. The underwriter's obligation is to buy these rights if no other investor want to buy them and provide the money to buy the shares that correspond to these un-exercised rights. That represents a cost to the underwriter who, in such a outcome has to commit funds to acquire and effort to sell the shares to the market. Therefore there is pressure from the underwriters to the issuers first to price the issue at low prices and second to make the issue at periods when investors are more willing to exercise their right. If there are periods during which existing shareholders are more willing to buy the new issue, then these pressures from the underwriters may ease thus making the issue of capital easier. Certainly periods when analysts' earnings forecasts are high and the market sentiment is favourable should be periods when investors will be more willing to participate in the issue and therefore underwriters' concerns should be minimised compared with periods with gloomy earnings' forecasts.

Even in the cases when the rights issue is not underwritten or there is no guarantee that the un-exercised rights will be bought by the underwriter, firms will be better off to time the issue at a period when earnings' forecast are high. Investors will be more eager to participate in the issue when they see that the earnings of the firms are high, reassuring firms that the they will raise all the amount that they have planned to fund their projects. On the other hand, the participation of investors on rights issues should be lower when the earnings forecasts are lower or the business environment is gloomy making the issuance of the full amount of capital planned by the firms more unlikely.

No study however has looked at the effect of analysts' earnings forecasts overoptimism on the timing of Seasoned equity issues in the UK. This chapter intends to fill the gap left in the literature by uncovering the relation, if any, between analysts' earnings forecasts overoptimism and the times series variation in the SEO volume in the UK.

Evidence from US studies indicate that firms that make a SEO suffer from a deterioration in their operating performance in the period after the issue. Loughran & Ritter (1997) argue that "the operating performance, as measured by numerous accounting measures peaks at the time of the offering deteriorates in the post-announcement years". If issuers time the issue at the peak of their earnings' performance then that should be mirrored into analysts' earnings forecasts. An increase in the forecasted earnings of the issuers should be observed in the pre-announcement years which should peak at the time of the announcement and should deteriorate in the years after the issue. Analysts should revise upwards their forecast in the pre-announcement years followed by a downwards revision in the post-announcement years. By using financial analysts' earnings forecasts we can see how the market thinks the equity issue will affect the issuers' profitability. Brous (1992) finds that the announcement of a SEO induces analysts to downgrade their current year earnings forecasts for the issuer indicating that the announcement of the issue creates concerns for investors about the future level of earnings. At chapter 6 we found that issuers with high earnings growth in the pre-announcement period have more negative price reactions on the announcement of the rights issue. If the market was expecting that high earnings' growth to continue after the issue then such a negative price reaction should not have occurred. However the significant negative reaction for firms with high growth in earnings indicates that the market regards that this growth in the pre-announcement period can not be sustained after the issue. The examination of analysts' earnings forecast revision should help us uncover the impact that the rights issue has on the profitability of the issuer. If the issue is a signal of bad times to come in terms of future earnings then analysts should downgrade their forecasts on the announcement of the SEO.

In this chapter we try to answer two questions. Is Seasoned equity volume in the UK affected by analysts' overoptimism and how do analysts view that the equity issue will affect the profitability of the issuer?

This chapter extends the SEO literature by investigating the relation between the financial analysts' earnings forecasts and the time series variation in the volume of rights issues in the UK. We investigate whether analysts are overoptimistic for the earnings of firms that make a rights issue and if so what is the effect of that overoptimism in the timing of equity issues. We also investigate how analysts revise their forecasts around the rights issue announcement to see whether issuers time the issue at the peak of their profitability.

Our main findings can be summarised as follows:

1.Financial analysts significantly overestimate the earnings of firms that make a rights issue in the year prior to the announcement of the issue. Forecast errors adjusted for industry and market value made in the year prior to the announcement are significantly negative.

2. There is a significant time series variation in analysts' overoptimism for the earnings of rights issuers.

3.Financial analysts' earnings forecast errors are negatively and significantly related with the amount of capital raised from rights issues. Periods when analysts are more overoptimistic about the earnings of recent SEO issuers, are periods when more capital is raised from SEOs in the current month.

4.Firms that make a rights issue exhibit a large increase in their forecasted earnings in the pre-announcement period which comes to an end with the announcement of the rights issue. After the announcement of the rights issue, analysts revise slightly downwards their forecasts but not at a magnitude equal to the pre-announcement increase.

The rest of the chapter follows like this: First we report our results on financial analysts' earnings forecast errors for firms conducting a rights issue for the period of 3 years prior to 3 years after the announcement of the issue followed by an investigation of the relation between the magnitude of forecast errors and the timing of rights issue volume. Last we look at the financial analysts' normal and abnormal forecast revisions around the rights issue announcement.

9.2. Financial Analysts earnings forecasts Errors Around the Rights Issue Announcement.

The issue of financial analysts earnings overoptimism around the SEOs has recently attracted the academia's interest. The studies that have been conducted however offer contradictory results.

Ali (1995) examines SEOs from 1972 to 1992 and finds that the forecasts errors made for the earnings of the year of the offering, after being adjusted for the I/B/E/S mean forecast error, are not significantly negative. The forecasts however that were made in forecasting the earnings of the 5 years after the issue announcement are significantly overoptimistic.

Hansen & Sarin (1998) find that the unadjusted forecast errors ,for the current year earnings analysts make in the period 6 terms prior to the announcement of the issue and up to 1 month after the announcement, are significantly negative. Unadjusted forecast errors are also significantly negative in the quarters +2 to +8, but of higher magnitude compared with the errors made in pre-announcement period. Hansen & Sarin (1998) report however that analysts' errors are higher when they forecast the earnings of firms with high growth. They find that firms that make a SEO are firms with high growth and therefore the forecast error have to be adjusted for this "growth bias". After adjusting the errors for the "growth" bias, Hansen & Sarin (1998) find that analysts are not overoptimistic in the period prior to the announcement of the issue. Forecast errors made in the pre-announcement period, adjusted for the growth bias, are positive and significantly different from zero. With regards to the post-announcement period, their analysis reveals that errors are insignificantly different from zero. Similar results were obtained when they adjusted the errors for the number of analysts following the issuer or when they looked at the long term growth in the earnings instead of current year earnings.

Dechow, Hutton & Sloan (1998) however in contrast with Hansen & Sarin (1998) find evidence that analysts overestimate the long term earnings of firms making a SEO by 10.6% when the forecasts are made in the period 9 months prior up to 3 months after the issue. The difference in the two papers is puzzling since both look at approximately the same time periods. The discrepancy however must be driven by the method used to calculate long term growth in earnings. Hansen & Sarin (1998) calculate the long term forecast error as the difference between the error made for the company and the error made for non-SEO companies with similar forecasted growth in their earnings. Dechow, Hutton & Sloan (1998) on the other hand, do not adjust their errors for any benchmark.

The low number of firms with long term growth forecasts available in the UK, limits our attempt to try and clear the situation in analysts' overoptimism. We have to use current year earnings. That means that we can compare our results only with with Hansen & Sarin (1998) and not with Dechow, Hutton & Sloan (1998) who use long term growth forecasts.

Details about the number of firms making a rights issue of common shares and the amount of capital raised in the period 1987 to 1996 are presented in table 9.1. Through the 10 year period, we have 1568 rights issues. There is a variation in the equity issue volume over time. 1987 was the year with the largest number of firms making a rights issue and 1993 was the year when the largest amount of capital was raised through rights issues with £7.8 billion. 1992 and 1995 were the least active years both in terms of number of rights issues per year with only 95 and 83 issues respectively and in terms of amount of capital raised with £2.2 and £2.8 billion raised respectively The I/B/E/S however does not cover the whole population of rights issuers. The coverage of I/B/E/S ranges from year to year. In 1987 for only 3.8% of issuers did I/B/E/S had earnings forecasts made in year -1 relative to the issue while in 1992 the coverage increased to 30%. In total, I/B/E/S provide earnings forecast with 1 month forecast horizon for 201 firms made in the year prior to the announcement of the Rights issues.

TABLE 9.1: ANNUAL DISTRIBUTION OF RIGHTS ISSUES ANNOUNCEMENTS AND I/B/E/S COVERAGE OF RIGHTS ISSUERS

The sample consists of Rights Issues of common equity made by listed firms.
The data for Rights Issues were collected from DATASTREAM™

Year	Total Number of Rights Issues Announcements	Total Number of Firms that made a Rights Issue and are covered with forecasts in the year prior to the Announcement (horizon of the forecast 1 month)	Total Amount of capital raised from rights issues in real terms (in £ millions)
1987	260	10 (3.8%)	6325
1988	174	16 (9.2%)	4612
1989	177	15 (8.4%)	2974
1990	149	22 (7.7%)	3108
1991	186	24 (12.9%)	6655
1992	95	29 (30.5%)	2228
1993	188	35 (18.6%)	7809
1994	151	16 (10.6%)	5115
1995	83	22 (26.5%)	2867
1996	105	12 (11.4%)	3253

We investigate the behaviour of financial analysts earnings forecasts for firms announcing a rights issue in the period 3 years before and 3 years after the announcement.

Table 9.2 reports the forecast errors that were made by analysts from year -3 to year +3 relative to the year of the announcement of the rights, in forecasting the current year earnings, without any adjustments. The same results are also presented in figure 9.1. Since analysts' accuracy improves as the forecast is made closer to the announcement of the earnings we report forecast errors for the 12 different forecast horizons. We also have in the last row of table 9.2 the average forecast errors irrespective of the forecast horizons.

In order to interpret the results we have to split the 6 year period into two, the pre-announcement period and the post-announcement period. With regard to the post-announcement period, we find that there are no big differences in analysts' forecast errors in years +1 to +3. All forecast errors for all forecast horizons made in the years +1 to +3 relative to the issue announcement are significantly negative. The average forecast error of all forecast horizons made in year +1 is -0.01448, significantly negative at 1% and the average error of all forecast horizons made in year +2 is -0.01559 which is also significantly negative at 1 %. The average error of all forecast horizons made in year +3 is -0.01557 significantly negative at 1% and not different from the average error made in year +2. In figure 9.1 the post-announcement years are presented with the dotted lines. Forecast errors are similar for all 3 post-announcement years especially when the horizon of the forecasts is more than 6 months.

In the pre-announcement years, we find that financial analysts' forecast errors are slightly higher (more negative) in the year before the announcement, (solid blue line in figure 9.1) relative to the first post-announcement year (year +1). The difference is significant for the five out of the twelve forecast horizons (2 months up to 6 months). The average forecast error of all forecast horizons made in year -1 is -0.01933 and is significantly more negative than the errors made in years +1, +2 +3 with test statistics, 3.1 ,2.5 and 2.4 respectively.

The least negative forecast errors were made during the year -2 relative to the announcement of the rights issue even though these errors were still significantly different from zero. The average error made in year -2 is -0.01063 significantly smaller than the error made in year -1. Forecast errors made in year -2 are significantly smaller than the errors in year -3 for 7 out of the 12 forecast horizons (months 2 to 7 and 9). Forecast errors made in the year -3 are similar in magnitude with the errors made in year -1 and for no forecast horizon are the errors in year -1 more negative than the errors in year -3.

The results on the unadjusted forecast errors made for firms that announced a rights issue reveals that analysts are overoptimistic when they forecast the earnings of rights issuers both before and after the announcement of the issue. There is however a difference in the magnitude of the overoptimism between the pre and post announcement years. Analysts are more overoptimistic when their forecasts are made in the year prior to the announcement of the rights issue and in the year -3 relative to the issue relative to the 3 post announcement years. These results are partly in line with the results of Hansen & Sarin (1998) who also report that analysts are overoptimistic (if no adjustments are made) for the current year earnings of firms making a SEO in the US both in the period before and after the issue announcement .

TABLE 9.2: AVERAGE FINANCIAL ANALYSTS' UNADJUSTED FORECAST ERRORS FOR RIGHTS ISSUERS IR YEARS -3 TO +3 RELATIVE TO THE ISSUE ANNOUNCEMENT .

The sample consists of all firms that made an announcement of a rights issue and for which for which forecasts for the current year earnings were available from I/B/E/S in the period 1987 to 1998. The Horizon of the forecast refers to the period in months between the time the forecast is made and the announcement of the current year earnings. The errors are calculated as the difference between the Actual Earnings per share and the Forecasted earnings per share divided over the share price at the end of the month that the forecast is made.

	"year -3"		"year -2"		"year -1"		"year +1"		"year +2"		"year +3"	
Forecast Horizon	Average Forecast error made in the year -3 from the issue	Number of forecast errors made in year -3	Average Forecast error made in the year -2 from the issue	Number of forecast errors made in year -2	Average Forecast error made in the year -1 from the issue	Number of forecast errors made in year -1	Average Forecast error made in the year +1 from the issue	Number of forecast errors made in year +1	Average Forecast error made in the year +2 from the issue	Number of forecast errors made in year +2	Average Forecast error made in the year +3 from the issue	Number of forecast errors made in year +3
1 month	-0.0031	142	-0.0048***	183	-0.0055**	201	-0.0076*	270	-0.0034**	277	-0.0055**	278
2 months	-0.0124**	147	-0.0038***	176	-0.0120*	209	-0.0039**	252	-0.0075**	274	-0.008*	271
3 months	-0.0182*	141	-0.0044**	183	-0.0154*	204	-0.0069**	259	-0.0079*	270	-0.0101*	266
4 months	-0.0168*	143	-0.0059**	176	-0.0156*	207	-0.0075*	258	-0.0117*	253	-0.0115*	263
5 months	-0.0127**	140	-0.0078*	167	-0.0213*	216	-0.0073*	245	-0.0166*	257	-0.0123*	253
6 months	-0.0182*	146	-0.0082*	168	-0.0243*	204	-0.0145*	237	-0.0171*	249	-0.0151*	253
7 months	-0.0208*	143	-0.0097*	175	-0.0234*	197	-0.0179*	232	-0.0168*	253	-0.0174*	253
8 months	-0.0243*	135	-0.0148*	174	-0.0213*	194	-0.0214*	236	-0.0228*	251	-0.0208*	238
9 months	-0.0276*	133	-0.013*	164	-0.0246*	201	-0.0223*	226	-0.0212*	252	-0.0214*	244
10 months	-0.0235*	130	-0.0182*	161	-0.0221*	184	-0.0235*	213	-0.0217*	241	-0.0234*	235
11 months	-0.0215*	116	-0.0201*	143	-0.0262*	173	-0.0229*	192	-0.0221*	219	-0.0224*	211
12 months	-0.0205*	83	-0.026*	105	-0.0353*	121	-0.0321*	131	-0.0257*	159	-0.0296*	138
Average of all forecast horizons	-0.01804*	1599	-0.0106 * a	1975	-0.01933*a	2311	-0.0144 * a	2751	-0.0156*	2955	-0.01557*	2903

** denotes Significance from zero at 1% two tail tests*
*** denotes Significance from zero at 5% two tail tests*
**** denotes Significance from zero at 10% two tail tests*
a , b , c Denote significance from same forecast horizon of the previous year of the life of the IPO at 1%, 5% and 10% respectively at two-tail tests.

We showed however in chapter 8 that analysts are on average overoptimistic for all firms and that the forecast errors are affected by the industry and the size of the firms. So, in order to get the error that is unique for the Rights issuers we have to adjust them for these factors. Hansen & Sarin (1998) report that firms with high forecasted growth have higher forecast errors and they adjust their forecasts errors for the "growth bias". Our data does not enable us to make such an adjustment. Instead, we adjust for the size effect which may approximate for the forecasted growth since small firms are more likely to experience higher growth rates than large firms.

Table 9.3 reports the average forecast error analysts make for the Rights issuers in the years - 3 to +3 after we adjusted them for the industry and the market value of the issuer. For detail on the calculation of the forecast errors and the adjustment procedure see section 4.5.

The results on the adjusted errors are also plotted in figure 9.2. Adjusted forecast errors made in the year -1 are significantly negative, at least at 10% level two tail tests, for 9 out of the 12 forecast horizons. Only the forecast horizons of 1, 2 and 10 months are not significant from zero at the above level of significance even though they were significant using one tail tests. The average adjusted forecast error of all the forecast horizons made in year -1 is -0.0086 which is significantly negative at 1%. For the year -2, rights issuers adjusted errors are significantly *positive* (solid green line in figure 9.2) for 7 out of 12 forecast horizons. For the remaining 5 forecast horizons, 4 are positive but insignificant from zero and one is negative but insignificant. The average adjusted forecast error of all forecast horizons made in year -2 is 0.0046 which is significantly negative at 1%. Adjusted errors for year -3 are not significantly different from zero apart from the 12 month forecast horizon which is significantly positive. The average adjusted forecast error of all forecast horizons made in year -3 is -0.00067 which is not significantly different from zero.

The adjusted forecast errors made in year -1 are significantly higher (more negative) than the adjusted errors made in year -2 for 11 of the 12 forecast horizons (only difference of 1 month forecast horizon was not significant). Errors made in year -1 are significantly more negative than errors made in year -3 for the 5,6, 7, 10, 11 and 12 month forecast horizons. In addition, the average adjusted forecast error of all forecast made in year -1 is significantly higher (more negative) than the average adjusted forecast error of all forecast horizon made in year -2.

TABLE 9.3: AVERAGE FINANCIAL ANALYSTS' ADJUSTED FORECAST ERRORS FOR RIGHTS ISSUERS IR YEARS -3 TO +3 RELATIVE TO THE ISSUE ANNOUNCEMENT

The sample consists of all firms that made an announcement of a rights issue and for which for which forecasts for the current year earnings were available from I/B/E/S in the period 1987 to 1998. The Horizon of the forecast refers to the period in months between the time the forecast is made and the announcement of the current year earnings. The errors are calculated as the difference between the Actual Earnings per share and the Forecasted earnings per share divided over the share price at the time the forecast is made. The errors are adjusted by subtracting the average errors analysts make for the firms in the same industry and the same size quartile.

	"Year -3"		"Year "-2"		"Year -1"		"Year +1"		"Year +2"		"Year +3"	
Forecast Horizon	average Adjusted Error made in the year -3 relative to the Rights issue	Number of forecast errors made in year -3	average Adjusted Error made in the year -2 relative to the Rights issue	Number of forecast errors made in year -2	average Adjusted Error made in the year -1 relative to the Rights issue	Number of forecast errors made in year -1	average Adjusted Error made in the year +1 relative to the Rights issue	Number of forecast errors made in year +1	average Adjusted Error made in the year +2 relative to the Rights issue	Number of forecast errors made in year +2	average Adjusted Error made in the year +3 relative to the Rights issue	Number of forecast errors made in year +3
1 month	0.0022	141	0.0017	181	-0.0008	197	-0.0033	261	-0.0003	266	-0.0021	271
2 months	-0.0039	146	0.0052**	174	-0.0053	204	0.0011	247	-0.0030	265	-0.0030	262
3 months	-0.0076	140	0.0057*	180	-0.0077***	200	-0.0009	253	-0.0021	261	-0.0036	256
4 months	-0.0053	142	0.0049**	173	-0.0071***	202	0.0002	252	-0.0042	245	-0.0034	252
5 months	0.0017	139	0.0059**	165	-0.0112**	212	0.0024	240	-0.0065***	249	-0.0032	244
6 months	-0.0008	145	0.0065**	166	-0.0123**	201	-0.0037	234	-0.0059	241	-0.0037	244
7 months	-0.0014	142	0.0058**	173	-0.0099***	192	-0.0045	229	-0.0028	246	-0.0054	244
8 months	-0.0015	133	0.0064**	173	-0.0073***	189	-0.0059	231	-0.0075***	245	-0.0081***	228
9 months	-0.0035	131	0.0058	164	-0.0104**	196	-0.0056	220	-0.0058	246	-0.0045	234
10 months	0.0023	128	0.0022	161	-0.0070	179	-0.0076	206	-0.0052	236	-0.0055	224
11 months	0.0039	114	0.0034	143	-0.0103***	169	-0.0073***	186	-0.0060	215	-0.0038	197
12 months	0.0125**	82	-0.0010	105	-0.0167***	117.	-0.0116***	126	-0.0077	155	-0.0084	126
Average of all forecast horizons	-0.00067	1583	0.0046* a	1958	-0.0086* a	2258	-0.0034* a	2685	-0.0046*	2870	-0.0043*	2782

** denotes Significance from zero at 1% two tail tests*
*** denotes Significance from zero at 5% two tail tests*
**** denotes Significance from zero at 10% two tail tests*
a, b, c Denote significance from same forecast horizon of the previous year of the life of the IPO at 1%, 5% and 10% respectively at two-tail tests.

For all the 3 post-issue announcement years, adjusted errors of different forecast horizons are predominantly not significantly different from zero. Only occasionally are errors significantly negative. The average forecast errors however irrespective of the horizon of the forecasts reveals that these forecasts are significantly negative. Comparing the average adjusted errors made in year -1 with the errors made in the first year after the announcement shows that the errors in year -1 are more negative than the errors in year +1 for 9 out of the 12 forecast horizons but significantly so only for 5 of them. The average adjusted forecast error of all forecast horizons made in year -1 is significantly higher (more negative) than the average adjusted errors of all forecast horizons made in years +1, +2 and +3 with test statistics 3.1,2.3 and 2.55 respectively.

Summarising our findings on the adjusted forecast errors made around the rights issue announcements, we find that issuers have more than the average overoptimistic earnings forecasts in the year before the announcement. Analysts that make earnings forecasts in the year prior to the announcement of the issue overestimate the issuers' earnings by greater percentages relative to all other years and especially relative to the first post-announcement year.

Out results on the adjusted forecast errors are different from the results of Hansen & Sarin (1998). They report that adjusted errors made both in the pre-announcement and post-announcement period are positive and significant different from zero and that forecast errors made in the pre-announcement period are more positive than those made in the post-announcement period.

Our results suggest that rights issuers experience more overoptimistic forecasts in the year prior to the issue announcement than the firms within the same industry and similar size. This is the first evidence that rights issuers could be exploiting analysts' overoptimism in the timing of the rights issue. That however does not indicate that the time series variation in rights issue volume is driven by overoptimism in analysts' forecasts. To argue that the rights issue activity is driven by analysts overoptimism we have to need to find first a time series variation in analysts overoptimism and second a direct and significant relation between analysts forecast errors and rights issue volume. More conclusive evidence is presented in the next part when we investigate whether more capital is raised when analysts errors are higher.

9.3. Financial Analysts Earnings Forecast errors and the Timing of Rights issues.

Rajan & Servaes (1998) argue that "if analysts are overoptimistic about the growth potential of IPO and there is substantial variation in analysts overoptimism across time more firms should come to the market when this overoptimism is severe". We found in chapter 8 that analysts' overoptimism for firms that recently went public varies across time. In the previous chapter we also found evidence that the UK IPO activity is affected by analysts' optimism with more capital being raised from IPOs during periods when analysts' earnings forecasts for the recent IPOs are more overoptimistic on an unadjusted basis or less pessimistic on a adjusted basis.

Our findings show that analysts' overoptimism for the firms that make a rights issue in the UK also varies across. In figure 9.3 we present the average forecast errors per year, made for rights issuers in the year -1 relative to the announcement of the issue (both adjusted and unadjusted), for 2 different forecast horizons. We can see a swing in analysts' overoptimism. As we found earlier, analyst on average are overoptimistic about the earnings of right issuers in the year before the issue announcement on an unadjusted basis. There are periods however when they are more overoptimistic than average. In 1987, 1988 and 1989 average unadjusted forecast errors (dotted lines in figure 9.3) made in the year prior to the rights issue with a forecast horizon of 4 months were not significantly different from zero while errors made in 1990 were significantly negative. Adjusted errors (solid lines in figure 9.3) also exhibit significant variations across time. If Rights issue activity is affected by analysts' overoptimism we should find that more capital should be raised from rights issues when analysts overoptimism is high.

The null and alternative hypothesis are as follows:

Ho: There is no relation between the magnitude of analysts' forecast errors made for the Rights issuers in the year prior to the announcement of the issue or the analysts' errors made for the whole market and Rights issuance volume.

Hε: There is a negative and significant relation between the magnitude of analysts' forecast errors made for the Rights issuers in the year prior to the announcement of the issue or the analysts' errors made for the whole market and Rights issuance volume.

To support the argument that analysts' overoptimism is related to the Rights issuance activity we seek to reject the null hypothesis in favour of the alternative.

In the next section we run monthly time series regressions adjusted for Newey West test for heteroscedasticity consistent covariance[22] similar to that of the previous part but this time the dependent variable is the amount of capital raised from rights issues. We regress the amount of capital raised from rights issues, in real terms (prices December 1996) per month, against the average of all forecast horizons excess forecast errors analysts made, it year -1 relative to the rights issue, for the current year earnings of firms that recently (previous 12 months) announced a rights issue both adjusted for industry and size and unadjusted. We also use as an independent variable the average of all forecast horizons excess forecast error analysts made in the previous 12 months for the earnings of all firms in the market (excluding 1% outliers). The results are in table 9.4. Since, the distribution of the SEO proceeds per month is not normally distributed we use the log transformed values which are normally distributed with a Jarque-Bera value 3.77, a value which rejects the hypothesis of non-normality at 15% level.

As with the IPOs we find that the magnitude of analysts' forecast errors has an effect on the rights issuance activity. In regression 1 of table 9.4 we use as independent variable the adjusted errors made for rights issuers in the year prior to

[22] We also run Tobit regressions since the dependent variable is truncated at zero. Tobit regressions correct the standard errors and in our regressions that lead to higher test statistics relative to the ordinary least squares.

the announcement. The negative coefficient indicate that as analysts become more overoptimistic (more negative adjusted forecast errors) about the earnings of firms that made a rights issue in the previous 12 months, more capital is raised from rights issues in that month. The coefficient was significant at 10% two tail tests with a test statistic of -1.6.

In regression 2 we use the average unadjusted error made for the rights issuers in the year prior to the announcement of the issue. The coefficients for the unadjusted errors also has a negative sign and is significant at 10% two tail tests with a test statistic of -1.7.

In regression 3 we introduce as independent variable in the regressions the average error made for all the firms that are covered in I/B/E/S in the previous 12 months. The coefficients for the errors made for the whole market in the previous 12 months are negative but insignificant at conventional levels.

In the regression 4 we use both the unadjusted error made for rights issuers as well as the error made for the whole market. The whole market error coefficient is not significantly negative . The coefficient for the unadjusted forecast errors made for the rights issuers is negative and significant again at 10% level.

We also used quarterly time series regressions instead of monthly where the dependent variable was the amount of capital raised per quarter and as independent variables we had the same variables as previously but not averaged over the previous 12 months but over the previous quarter. The results were qualitative similar. The adjusted forecast errors made for rights issues were negatively related with the Rights issuance activity and the coefficients for the unadjusted forecast errors made for rights issuers were negative and significant. The coefficients for the whole market errors however were not significant when they were the only independent variable and were also not significant when they were used in the regressions together with the unadjusted Errors made for the rights issuers that had indeed negative and significant coefficients.

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[23] We also run Tobit regressions since the dependent variable is truncated at zero. Tobit regressions correct the standard errors and in our regressions that lead to higher test statistics relative to the ordinary least squares.

TABLE 9.4:REGRESSION OF RIGHTS ISSUES PROCEEDS AGAINST FORECAST ERRORS JANUARY 1998 TO DECEMBER 1996

The regressions we run had the following format:

Log(Rights PROCEEDS) t $= \alpha_0 + \alpha_1$***Log((1+Rights Error adjusted)$_t$*** $+ \alpha_2$ ***Log((1+Errors made for Rights Unadjusted)$_t$*** $+ \alpha_3$ ***Log((1+Errors made for the whole market)$_t$***

	Constant	Errors Made for Recent RIGHTS (Adjusted)	Errors Made for Recent RIGHTS (Unadjusted)	Errors made for the Whole Market	R^2 adjusted
1	5.194 *26.774*	-90.102 *-1.694*			13..1%
2	5.193 *27.726*		-60.449 *-1.707*		14.2%
3	5.188 *28.949*			-60.001 *-1.263*	2.1%
4	5.194 *29.588*		-81.884 *-1.741*	-93.198 *-1.347*	11.8%

The above regressions are monthly time series regressions. To calculate the independent variables first we calculated the adjusted and unadjusted forecast errors analysts made for rights issuers during the year before the issue announcement and the forecast errors analysts made for all firms covered by I/B/E/S (excluding the 1% at the 2 tails) in each month from January 1987 to December 1996 according to the forecast horizons and created 3 groups (one for the unadjusted errors, one for the adjusted errors and one for the whole market errors) of 12 monthly time series one for the forecast errors of each forecast horizon.

Following that we calculated for each one of the 3 groups 12 monthly time series with the average excess forecast error one for each forecast horizon. To find the average excess error in a particular month for a particular forecast horizon, we remove from the average forecast error made in that particular month for that particular forecast horizon the average forecast error made for all rights issuers from 1987 to 1996 during the year prior to the issue announcement and had that particular forecast horizon.

Instead of having 12 monthly time series regressions, one for each forecast horizon we opted to use only one where the dependent variable is the monthly time series of the average of the average excess forecast errors of all the 12 forecast horizons. We gave equal weight in each forecast horizon in the averaging process.

We use three different independent variable The unadjusted excess forecast errors made for the rights issuers during the year prior the issue announcement that announced a rights issue in the previous year. The adjusted excess forecast errors made for the rights issuers during the year prior the issue announcement that announced a rights issue in the previous year. The excess forecast errors made for the whole market for all firms covered by I/B/E/S (excluding the 1% outliers in the two tails) during the previous year. The adjusted forecast errors made for the rights issuers are calculated by subtracting from the unadjusted errors, the average forecast errors analysts made for the firms in the same industry as the rights issuers firm and similar market value(same quartile) as the rights issuers and in the same year as the unadjusted error was made. T-Statistics are below the coefficients

Concluding our results, we can say that financial analysts' forecast overoptimism for the earnings of firms that announced a rights issue in the previous year has a significant effect on the rights issue activity in the current month. More capital is raised when the overoptimism for the earnings potential of resent issuers is high. Both adjusted and unadjusted errors made for recent issuers were negatively and significantly related with the Rights issuance volume. Using quarterly time series regressions instead of monthly, where the dependent variable was the amount of capital raised per quarter and the independent variables were averaged over the previous term and not year, also produced significantly negative coefficients for the adjusted and unadjusted errors. We also find that the magnitude of financial analysts overoptimism for the whole market does not have a significant effect on the timing of Rights issue activity in the monthly regressions or in the quarterly regressions.

These findings suggest that rights issue volume may be at least partially driven by analysts' overoptimism. There are periods where analysts become more overoptimistic about the earnings potential of the firms that recently raised capital. Other firms seem to seizure that overoptimism and decide to make an issue as well.

As we saw in chapter 8, the average errors made for the whole market are significantly more negative during the downturn of the cycle. That could have indicated that we have more capital raised from rights issue when analysts are more overoptimistic which may be periods of the downturn of the cycle. As we found for the IPOs however in the chapter 8, the average errors analyst make for recent IPOs during the recession are not higher (more negative) than the errors made during the upturn of the cycle. As the following table however indicates, the average errors (adjusted and unadjusted) made for the rights issuers in the year -1, do not differ significantly from expansion to recession as well.

TABLE 9.5: AVERAGE FINANCIAL ANALYSTS' FORECAST ERRORS MADE FOR RIGHTS ISSUERS IN YEAR -1 ACROSS THE UPTURN AND DOWNTURN OF THE BUSINESS CYCLE

Analysts' average unadjusted earnings forecast Errors made for rights Issuers in the year -1 relative to the announcement of the issue			
	Average forecast error made during the UPTURN of the Business Cycle	Average forecast error made during the DOWNTURN of the Business Cycle	T- stats of difference between downturn and upturn
Forecast Horizon 1 months	-0.0056 (90)	-0.0055 (111)	-0.02
Forecast Horizon 2 months	-0.0136 (89)	-0.0108 (120)	-0.37
Forecast Horizon 3 months	-0.0173 (85)	-0.0139 (119)	-0.38
Forecast Horizon 4 months	-0.0184 (89)	-0.0134 (118)	-0.57
Forecast Horizon 5 months	-0.0264 (94)	-0.0174 (122)	-0.87
Forecast Horizon 6 months	-0.0299 (90)	-0.0198 (114)	-0.92
Forecast Horizon 7 months	-0.0223 (93)	-0.0244 (104)	0.19

Forecast Horizon 8 months	-0.0192 (93)	-0.0233 (101)	0.44
Forecast Horizon 9 months	-0.024 (102)	-0.0251 (99)	0.10
Forecast Horizon 10 months	-0.0148 (97)	-0.0302 (87)	1.51
Forecast Horizon 11 months	-0.0208 (89)	-0.0318 (84)	0.96
Forecast Horizon 12 months	-0.0191 (53)	-0.0478 (68)	1.57
Average of all forecast Horizons	-0.01936 (1064)	-0.02043 (1250)	-0.55

Analysts' average adjusted earnings forecast Errors made for rights Issuers in the year -1 relative to the announcement of the issue

	Average forecast error made during the UPTURN of the Business Cycle	Average forecast error made during the DOWNTURN of the Business Cycle	T- stats of difference between downturn and upturn
Forecast Horizon 1 months	-0.0017 (86)	-0.0002 (111)	-0.33
Forecast Horizon 2 months	-0.0071 (85)	-0.0041 (119)	-0.39
Forecast Horizon 3 months	-0.0117 (82)	-0.0049 (118)	-0.80
Forecast Horizon 4 months	-0.0121 (85)	-0.0034 (117)	-0.99
Forecast Horizon 5 months	-0.0177 (91)	-0.0062 (121)	-1.16
Forecast Horizon 6 months	-0.0192 (89)	-0.0068 (112)	-1.24
Forecast Horizon 7 months	-0.0097 (90)	-0.0100 (102)	0.03
Forecast Horizon 8 months	-0.0059 (90)	-0.0086 (99)	0.31
Forecast Horizon 9 months	-0.0121 (99)	-0.0085 (97)	0.37
Forecast Horizon 10 months	-0.0018 (94)	-0.0128 (85)	1.10
Forecast Horizon 11 months	-0.0079 (87)	-0.0128 (82)	0.44
Forecast Horizon 12 months	-0.0050 (50)	-0.0259 (66)	1.19
Average of all forecast Horizons	-0.00948(1031)	-0.000776 (1229)	0.79

Unadjusted forecast errors made for rights issuers in year -1 relative to the issue announcement do not differ significantly across the upturn and downturn of the business cycle for 10 out of the 12 forecast horizons. Only errors made 10 and 12 months before the announcement of earnings were significantly more negative during the downturn of the cycle but the coefficients for these forecast horizons were not significant in the regressions of table 9.4. The average unadjusted forecast error of all forecast horizons made during the upturn of the business cycle is -0.01936 while the average unadjusted forecast error of all forecast horizons made during the downturn of the business cycle is -0.02043 not significantly different from the average unadjusted error made during the upturn with a test statistic of -0.55. The adjusted errors made for rights issuers in year -1, do not differ significantly across the upturn and downturn of the cycle for no forecast horizon. The average adjusted forecast error of all forecast horizons made during the upturn of the business cycle is -0.00948 while the average adjusted forecast error of all forecast horizons made during the downturn of the business cycle is -0.000776 not significantly different from the average adjusted error made during the upturn with a test statistic of 0.79. Therefore our findings that more capital is raised from rights issuers when analysts are more overoptimistic for the earnings of recent issuers do not imply that more capital is raised during recessions because adjusted and unadjusted errors made for recent issuers are not higher (more negative) during the downturn of the cycle.

9.4. RIGHTS ISSUES AND ABNORMAL FORECAST REVISIONS

The previous results indicate that firms time the announcement of the rights issue when analysts' optimism for the earnings of all firms in the market or for the firms that made a similar announcement in the previous year is high . There may be however another significant factor that could have a significant effect on the timing of Rights issues and that is the analysts optimism for the earnings of the particular company that is about to announce this equity issue.

Firms may time the equity issue when analysts forecast high growth in their earnings. Firms may find that there is an opportunity to make an issue when their earnings forecasts are too high. Managers can use the inside information they posses to estimate with accuracy whether the current forecasts that analysts make are overoptimistic or not. If the earnings forecasts for the particular company are overoptimistic that will make the rights issue easier. More investors will be willing to participate in the issue and larger amounts of capital will be easier to be raised.

If firms time the rights issue when analysts are overoptimistic for their earnings, then analyst should revise downwards their forecasts as soon as they realise that their earnings expectations can not be materialised.

Brous (1992) examines financial analysts earnings forecasts revisions for 321 firms that made a SEO in the US. He finds that the SEO is considered as a negative signal for the profitability of the issue. Analyst revise upwards their earnings forecast in the months prior to the announcement of the issue. On the month of the announcement of the SEO, analysts revise downward their current year earnings forecast. The downwards revision continues up to month 3 after the issue announcement. Brous (1992) suggests that the "announcement conveys negative information about the level of future earnings".

In chapter 6 we found that the announcement of a rights issue in the UK is accompanied by significant negative returns. We reported that firms with high earnings growth in the pre-announcement periods and high debt to equity ratios have more adverse price reaction than firms with low earnings growth and low debt to equity ratio. Those results indicate that the market expresses more doubts about the future profitability of firms with high growth in earnings in the pre-announcement period as if investors may assume that the upwards trend will not continue after the issue. In addition, highly leveraged firms whose profitability is high should not have problems servicing the debt and therefore if investors think that the earnings of highly geared firms are high enough to sustain such high level of debt, no adverse price reaction should be expected. If the level of earnings for highly geared firms however is not adequate to enable the firms to service the debt, then the equity issue may send signals to the market that the extra funds are needed to help the firm services the debt. The negative price reaction for highly leveraged firms indicate that investors may think that the future profitability of these firms will decrease to an extent that without any issue it may threaten the viability of the firm. Therefore the rights issue may send signals to the market that the future profitability of the issuer is in danger. The use of financial analysts earnings forecasts can help us to see in a direct way how the market views the rights issue will affect the profitability of the issuer. If investors regard a rights issue as a bad signal for the future profitability of the issuer than we should find a downward revision in the forecasted earnings at the month of the announcement of the rights issue and thereafter.

We examine financial analysts normal and abnormal forecast revisions for firms that announce a rights issue in the period 1987 to 1996. Only firms with earnings forecast for at least 5 months prior to the announcement of the issue are included in the sample. I/B/E/S analysts provided forecasts for 157 [24] rights issuers at the time the rights issue announcements were made.

Table 9.6 presents the average normal forecast revision from month -12 to month +12 relative to the announcement of the issue. What we see is that on the announcement of the rights issue, analysts revise downwards their earnings forecasts.

[24] For 11 firms there was not enough data to estimate the abnormal forecast revisions so the size of the sample for abnormal forecast revisions is 146

Normal forecast revisions are significantly negative for every month around the equity issue announcement. The median forecast revision however is 0 for all months. That happens because not all analysts revise their forecast every month. We can see in the 5th column of table 9.6 that around 50 to 60% of forecast revisions are zero showing that analysts do not revise their forecasts every month. The percentage of negative forecast revisions however is usually greater than the percentage of positive forecast revisions.

TABLE 9.6: AVERAGE FINANCIAL ANALYSTS' FORECAST REVISIONS FOR FIRMS ANNOUNCING A RIGHTS ISSUE

Month relative to the issue announcement	Average Forecast Revision for firms making a rights issue	t statistic of difference of forecast revision from zero	Percentage of Positive forecast revisions	Percentage of zero forecast revisions	Percentage of negative forecast revisions
-12	-0.0018*	**-2.59**	0.16	0.54	0.30
-11	-0.0054	**-1.15**	0.24	0.52	0.24
-10	-0.0039**	**-1.86**	0.24	0.44	0.32
-9	-0.0018**	**-2.03**	0.19	0.50	0.31
-8	-0.0014*	**-2.92**	0.21	0.50	0.30
-7	-0.0012***	**-1.55**	0.17	0.59	0.24
-6	-0.0017**	**-1.93**	0.19	0.57	0.24
-5	-0.0058**	**-2.26**	0.19	0.48	0.33
-4	-0.0021*	**-2.53**	0.17	0.57	0.27
-3	-0.0035*	**-2.45**	0.15	0.57	0.28
-2	-0.0014**	**-1.82**	0.21	0.58	0.21
-1	-0.0014**	**-2.27**	0.19	0.56	0.25
0	-0.0021*	**-2.45**	0.19	0.55	0.26
1	-0.0011	**-0.94**	0.22	0.51	0.26
2	-0.0033**	**-1.78**	0.23	0.51	0.26
3	-0.0011*	**-2.88**	0.13	0.56	0.31
4	-0.0043**	**-2.03**	0.18	0.55	0.27
5	-0.0051*	**-2.34**	0.15	0.52	0.33
6	-0.0025**	**-1.65**	0.19	0.55	0.26
7	-0.004*	**-3.01**	0.18	0.45	0.38
8	- 0.0035**	**-1.94**	0.21	0.48	0.31
9	-0.0031*	**-2.94**	0.16	0.52	0.32
10	-0.0013**	**-1.65**	0.15	0.56	0.29
11	-0.0014**	**-1.83**	0.22	0.52	0.26
12	-0.0018*	**-3.05**	0.14	0.57	0.29

*,**,*** denotes Significance at 1%,5%,10% respectively one tail tests

As we had argued however in chapter 4, the normal forecast revision is not a correct measure of how analysts see the effect of the rights issue on the rights issuer profitability, as this does not take into account the negative drift in analysts' forecast revisions. The normal forecast revision reflects two different sets of information. The one set refers to the information that makes analysts to adjust their forecasts to lower levels simply because, as the announcement of the earnings approaches, the release of new information makes them realise they have overestimated the earnings. The second set refers to the new information that is revealed to the market with the announcement of the issue. The normal forecast revisions do not distinguish between the two different sets of information. Therefore, these negative normal forecast revisions do not distinguish which part of these revisions is due to the improved accuracy of analysts as they approach the announcement of earnings and which is due to the new information that is generated by the rights issue announcement. A more appropriate measure is the abnormal forecast revisions because that takes into account the negative drift of the analysts' forecast revisions. The abnormal forecast revisions manage to "sterilise" the revisions and reveal the forecast revision that is caused by the announcement of the rights issue only.

In table 9.7, we present the abnormal forecast revisions for firms that announced a rights issue from month -12 to month +12. (The abnormal forecast revisions are also potted in figure 9.5). We find that the rights issuers has positive abnormal forecast revisions in the pre-announcement period. In the 3 pre-announcement years, 30 months have positive abnormal forecast revisions (15 significant at 10% level one tail or higher) and only 6 have negative abnormal forecast revisions (all insignificant). In the year prior to the announcement of the issue, all monthly abnormal forecast revisions apart from one, are positive and 6 of them are significantly different from zero.

On the month of the announcement of the issue, the abnormal forecast revision is marginally negative but not significant. Abnormal forecast revisions after the issue announcement are predominantly negative. In the 36 months after the issue, 26 months are characterised by negative abnormal forecast revisions but only 8 of them are significant at least at 10% level one-tail tests. In the year after the announcement of the issue, 9 months have negative abnormal forecast revisions and 3 of them are significant. Overall, we see a big difference in the analysts' abnormal forecast revisions in the pre-announcement and the post-announcement period. In the 36 months prior to the issue announcement the cumulative monthly forecast revision is +0.0947 while in the 36 post-announcement months the cumulative abnormal forecast revision is -0.047.

TABLE 9.7: AVERAGE FINANCIAL ANALYSTS' ABNORMAL FORECAST REVISION FOR FIRMS ANNOUNCING A RIGHTS ISSUE

Month relative to the issue announcement	Average Abnormal Forecast Revision	t statistic of difference of abnormal forecast revision from zero	Percentage of Positive Abnormal forecast revisions	Percentage of zero Abnormal forecast revisions	Percentage of negative Abnormal forecast revisions
-12	0.0038***	**1.51**	0.65	0.02	0.33
-11	0.0045**	**1.85**	0.66	0.03	0.31
-10	0.0023	**0.75**	0.67	0.03	0.30
-9	0.0039***	**1.51**	0.70	0.00	0.30
-8	0.0016	**1.21**	0.62	0.03	0.35
-7	0.0035**	**1.89**	0.66	0.03	0.31
-6	0.0030**	**1.88**	0.65	0.05	0.30
-5	0.0006	**0.20**	0.70	0.02	0.29
-4	0.0019***	**1.41**	0.69	0.02	0.29
-3	-0.0004	**-0.30**	0.69	0.00	0.31
-2	0.0008	**0.64**	0.66	0.02	0.32
-1	0.0007	**0.74**	0.64	0.02	0.34
0	-0.0004	**-0.48**	0.60	0.00	0.40
1	0.0005	**0.57**	0.62	0.00	0.38
2	-0.0016	**-0.80**	0.64	0.00	0.36
3	0.0005	**0.61**	0.64	0.00	0.36
4	-0.0024	**-1.21**	0.67	0.00	0.33
5	-0.0043**	**-1.78**	0.62	0.02	0.36
6	-0.0015	**-0.96**	0.66	0.01	0.34
7	-0.0022**	**-1.65**	0.63	0.00	0.37
8	-0.0028***	**-1.37**	0.68	0.00	0.32
9	-0.0015	**-1.26**	0.66	0.01	0.33
10	-0.0002	**-0.20**	0.65	0.00	0.35
11	0.0000	**0.01**	0.68	0.00	0.32
12	0.0001	**0.12**	0.62	0.01	0.37

*,**,*** denotes Significance at 1%, 5%, 10% respectively, one tail tests

Figure 9.5 presents the abnormal forecast revisions at a monthly continuously compounded form based at month -36[25]. We can see that there is an upwards forecast revision in the pre-announcement months. After the announcement of the issue, forecast revisions are predominantly negative creating a downward slope.

In general, we find that a rights issue is regarded by analysts as a negative event in terms of its effect on the forecasted earnings. We find that a rights issue induce analysts to slightly decrease their earnings forecasts for the firms that announced a rights issue. The downwards revision of earnings however is not an immediate and highly drastic action as Brous (1992) finds for US SEOs but it is rather a smooth process that lasts for about 2.5 years. Analyst revise downwards their forecasts after the announcement of the issue but not at a magnitude and significance found in US SEOs.

Our findings partly support the findings of Brous (1992) who found that a Seasoned equity offer in the US is regarded as a negative signal about the future earnings of the issuer. Brous (1992) finds that analysts revise upwards their forecasted earnings before the announcement and revise downwards their earnings forecasts of the current year earnings after the issue. Firms in the US seem to time the equity issue decision in periods when analysts increase their earnings forecasts.

Our results also indicate that managers time the rights issue announcement after an increase in their forecasted earnings. Forecasted earnings increase before the issue and decrease after the issue. However the results are far from overwhelming. The significance of the downwards forecast revisions is very limited. The size of our sample is approximately half of that of Brous (1992). It will be possible that in future research when the number of earnings forecasts available will increase to test the above propositions with greater confidence.

What our results however indicate is that Rights issuers time their issue after an increase in their earnings and that the forecasted earnings decrease after the issue. In contrast with our findings for the IPOs sample where we find that the IPO firms do

[25] Cumulating the abnormal forecast revisions instead of continuously compounding them produced insignificant differences

not time the issue around the peak of their profitability, the evidence on the SEOs indicate that issuers time the issue at the peak of their profitability.

9.5 CONCLUSIONS

Evidence from US studies suggest that Seasoned equity issuance activity is driven by variations in investors' sentiment. Financial analysts' earnings forecasts should be affected by the market sentiment and therefore can be used as a proxy for the market sentiment. This chapter investigated the relation between the financial analysts' earnings forecasts overoptimism and the timing of Rights issues in the UK.

We find that firms that make a rights issue have more than the average overoptimistic forecasts in the year prior to the announcement of the issue. Unadjusted forecast errors are significantly negative in the year prior to the announcement of the issue and are significantly more negative than the first post announcement year. Adjusted errors are significantly negative in the year prior to the announcement of the rights issue.

The magnitude of the forecast errors analysts make for the recent rights issuers has a significant effect on the amount of capital raised from rights issues. More capital is raised from rights issues when the, average of the previous 12 months, forecasts analysts make, in forecasting the earnings of seasoned issuers in the year -1 relative to the issue announcement, are more overoptimistic. The overoptimism for the earnings of the firms in the whole market did not had a significant effect on the SEO volume. Periods when analysts make more overoptimistic forecasts for the whole market are not periods when more capital is raised from rights issues.

This chapter also used financial analysts earnings forecasts to see what impact the SEO announcement has on the profitability of the issuer. The examination of financial analysts' earnings forecast revisions showed that firms that make a rights issue experience significantly positive abnormal forecast revisions in the pre-announcement period. After the announcement of the issue, analysts revise downwards their forecasts, but the downwards revision is not a drastic one. With the announcement of the rights issue a process of downwards forecast revisions commences which lasts for about 2.5 years. The downwards forecast revision however is not a highly significant one.

Overall our results indicate that Rights issue volume is driven at least partially by analysts overoptimism for recent issuers. As analyst become more overoptimistic about the earnings of the recent Issues , more capital is raised from seasoned equity issues.

CHAPTER 10: CONCLUSIONS

This thesis has tried to answer what are the driving forces behind the time series variation in the number of firms that make Initial public offerings, Seasoned equity offerings and takeover bids that are financed with equity in the UK and in the amount of capital that firms raise from IPOs and SEOs. The innovating thing in the thesis is that we treat the three corporate actions in a unified framework and try to find whether the factors that drive one activity drive the other two as well.

The thesis starts with a review of the literature findings regarding the three stylised facts that characterise the firms that make an IPO, SEO and a takeover bid that is financed with equity. First, they are all characterised by significant adverse share price movements in the period around the event which create additional indirect costs for the firms. IPO firms have very large positive returns in the first trading day and firms that make a SEOs or a takeover bid financed with equity experience a significant drop on their share price on the announcement of their plans. Second, the overwhelming empirical evidence suggest that firms that make an IPO,SEO or a takeover bid that is financed with equity perform badly in the long run after the event. Third, the number of firms that engage in those activities vary significantly across time. An evaluation of the theories developed for the three abnormal phenomena reveals that information asymmetries about the intrinsic value of issuers and bidders and managers' incentives to make equity issues and takeover bids that are financed with equity when the share prices are overvalued provide the most widely accepted explanation for the drop on the share price of the SEO and the bidder. Cognitive bias and overvaluation timing are the best explanations the literature can provide for the long run underperformance of the IPOs, SEOs and equity bidders. As far as the time series variation of the number of firms engaging in these activities is concerned, changes in business conditions and investment opportunities, exploitation of investors' sentiment and market imperfections such as information asymmetries create "windows of opportunity" when equity issues and takeover bids can be made in more favourable terms. The literature provides ample evidence that the three corporate activities have certain similarities. There is no study however that investigates and presents what is the degree of unification of the three corporate activities.

Chapter 3 reviews the previous studies made on the effect that analysts' earnings forecast optimism and forecast revisions have on the timing of equity issues. The literature has concentrated on two things: First on the investigation of whether analysts are more overoptimistic for the earnings potential of issuers in the periods around the issues and relative to non-issuers and what effect that overoptimism has on the timing of issuance activity. Second, how analysts perceive that an equity issue will affect the profitability of the issuer. Evidence suggests that analysts are overoptimistic for the earnings of issuers in the years after the IPO and before the SEO and that analysts' overoptimism has a significant effect on IPO volume. More firms go public when analysts are more overoptimistic for recent issuers. Negative earnings forecast revisions on the announcement of the SEO suggest that a SEO is regarded as a negative signal for the future profitability of the issuer and that the issuers time the SEO at the peak of the profitability.

Chapter 4 details the data collection methods used in the thesis, the samples used and the methodology followed to calculate abnormal announcement period returns, long run performances, financial analysts adjusted and unadjusted earnings forecast errors as well as normal and abnormal earnings forecast revisions.

Chapter 5 is the first empirical chapter investigating what drives the Initial public offerings activity in the UK. We find that the magnitude of first day returns has no significant effect on the timing of IPOs. Periods of high IPO activity are not periods when average first day returns are low. As expected, we report a very strong business cycle effect. IPO activity in the UK is significantly higher during the upturn of the business cycle. Chapter 5 also reveals significant evidence in favour of the "sentiment timing" theory. As with other studies we find that IPO firms perform badly after the listing. The underperformance however is concentrated only to IPOs that go public in periods of heavy IPO volume while IPOs that go public in light volume periods do not underperform. The difference in the performance of IPOs that go public in Heavy and Lights volume periods is significant indicating that Heavy volume period IPOs are more overvalued than Light volume period IPOs. Managers "time" the IPOs in periods when investors are paying for the new issues prices which are above the fundamentals.

To further strengthen our support to the "sentiment" timing theory we use, in chapter 8, financial analysts' earnings forecasts as a proxy for the market sentiment. We find that the magnitude of analysts' optimism has a significant effect on the timing of UK IPOs. More capital is raised from IPOs when analysts are more overoptimistic about the earnings of recent IPOs.

The analysis of the UK rights issuance activity in chapter 6 shows that different forces from those found for IPOs are responsible for the variation in the SEO volume. Unlike IPOs, our analysis of rights issues shows that adverse selection costs play an important part in the timing of SEOs in the UK. More firms make a rights issue and more capital is raised from rights issues during months when the adverse selection costs of the previous quarter are low. In contrast with the IPOs, we do not find that the rights issuance activity differs significantly between upturns and downturns of the cycle. That is due to the extremely high activity observed in the last stage of the recession. We also do not find that the driving force behind the time series variation in rights issues is overvaluation exploitation. The post-announcement performance of issuers that make the announcement in heavy volume periods is similar with the post-announcement performance of rights issuers that make the announcement in light volume periods. Periods of heavy rights issue activity are not periods when the issuers are more overvalued than periods with low activity. Chapter 9 uncovers that analysts' earnings forecasts overoptimism has a significant role in the timing of SEOs as well. More capital is raised during periods when analysts are more overoptimistic for the earnings of recent seasoned equity issuers.

Chapter 7 investigated the timing of takeover bids that are financed with equity. Our results show that neither adverse selections nor overvaluation exploitation is a major driving force behind the time series variation in the volume of equity financed bids. The magnitude of adverse selection costs, associated with bids that are financed with equity, has no effect on how many bidders will choose equity to finance the bid. A strong business cycle effect is also present in the equity financed takeover bids. The percentage of equity financed takeover bids over all bids increases when stock markets are rising and when the economy is in the phase of an expansion. 10% more bidders use equity to finance a takeover bid during the upturn relative to the downturn of the cycle. Our evidence on the post-bid performance indicate that firms that finance the bid with cash outperform firms in the same industry and similar market to book or similar market values. Takeover bids that are financed with equity however, significantly destroy the value of the bidders' shareholders since, after the equity financed takeover bid, bidders underperform significantly relative to firms in the same industry and similar market to book or similar market values. That could indicate that the reason behind the use of equity as a method of payment is that bidders' shares are overvalued when they propose the use of equity to finance a takeover bid. We find however no difference in the post-bid performance of bidders who use equity to finance the bid and made the announcement in heavy volume periods with those bidders that made the announcement in light volume periods. Bidders that use equity to finance the bid are not more overvalued in periods of heavy activity. That result put doubts as to whether the poor long run performance of equity financed bids is driven by deliberately timing the bid at periods when shares are overvalued. The time series variation in the equity financed takeover activity is not driven by variations in the magnitude of overvaluation.

Evidence from financial analysts earnings forecasts presented in chapter 8 revealed that UK IPO firms do not time the equity issue at the peak of their profitability. Financial analysts revise upwards their earnings forecasts for the IPOs during the first 30 months after the issue. In the months 31 to 60 after the IPO, analysts' forecasts revisions are slightly negative. Furthermore, the earnings that IPOs report show a steady growth rate in the first 3 years after the listing. Only in 4th and 5th year does the growth rate of earnings decreases. That makes us conclude that firms time the IPOs at the start or during periods of sustainable earnings growth and not at the peak of their operating performance.

The large positive returns at the first trading day of the IPO and the significant price drops at the announcement of the SEO and the takeover bids that are financed with equity are anomalies that have attracted our attention as well. As with previous studies we report in chapter 5 that UK IPOs have large first day returns.

IPOs that were placed directly to investors and firms with high Price earnings ratios have higher first day returns. The improvement in economic conditions has a significant effect on the average first day returns. The average underpricing is higher during the upturn of the business cycle.

Chapter 6 also investigated the effect the announcement of a rights issue has on the share price of the issuer. We find that the announcement of a rights issue in the UK is accompanied by a drop on the share price of the issuer of 1.79%. This drop is not caused by the increase in the supply of shares nor from the redistribution of wealth from shareholders to bondholders. We find that the negative price reaction is most likely to be driven by investors who regard the issue as a negative signal for the future profitability of the issuer and that is supported by two significant findings. First, firms with high growth in their earnings in the period prior to the announcement have more negative price reactions on the announcement of the issue. The market reacts more adversely on the announcement of rights issues made by firms that have experienced high growth in their earnings which is consistent with the market taking the view that this upwards trend will not continue in the future. Second, analysts revise upwards their earnings forecasts in the period prior to the announcement and revise their forecasts downwards after the announcement of the issue. The difference in the monthly forecast revisions between the pre-announcement and post-announcement periods is highly significant. Another interesting result of chapter 6 is that the adverse selection costs associated with the announcement of a rights issue are significantly lower during the upturn of the business cycle which is also consistent with the possibility that the earnings of firms are less likely to be hit during the upturn of the cycle than the downturn. Firms that announce a SEO in the upturn of the business cycle have around 1.0% higher returns than the SEOs that announce the issue during the downturn of the cycle.

A significant negative price reaction is found in chapter 7 for the firms that announce a takeover bid. The price of the bidder drops by 1.07% on average. The magnitude of the drop varies according to the method of payment with bids that include equity in the financing package having significantly more negative returns relative to bids that include cash in the financing package. As with the rights issues we find that the announcement of a takeover bid that is financed with equity is accompanied by less negative returns when the announcement takes place during the upturn of the business cycle. The difference in the announcement period returns across upturns and downturns is around 1.1% and remains even when we take into account the various bidders and targets characteristics that affect the market reaction to the equity financed bids. The negative price reaction on the announcement of the equity financed bid is not caused by the "price pressure" nor from the redistribution of wealth from shareholders to bond holders. The acquisition of large targets in relation to the size of the bidder is accompanied by less negative returns in contrast with the theoretical predictions of the two models above. The market reacts less adversely in equity financed bids when the bid is successful, when the growth opportunities of the target are high and when the bidder is less overvalued and measures of growth and profitability show that the bidder on its own has little potential for expansion.

This thesis has tried to answer two main questions. The first one was whether the three equity issuance activities, the IPO, the SEO and the takeover bid that are financed with equity move together. Our motivation was to see whether the timing aspect of the equity issue decision is driven by the same factors whether this issue is an IPO a SEO or it is made in order to finance a takeover bid. Our answer to that question is that the three equity issuance activities differ as to what are the main motivations behind the timing decision. The three corporate activities do not respond to the same factors in the same way.

The second question we tried to answer is what is the effect of certain factors on the timing of equity issues. We tested what impact four main factors, the business conditions, the adverse selection costs, overvaluation exploitation and sentiment timing, have on the timing of IPOs, SEOs and takeover bids that are financed with equity.

Business conditions have a significant impact on the timing of IPOs and takeover bids that are financed with equity. More firms make an IPO and more capital is raised from IPOs and more bidders use equity to finance the bid during the upturn of the business cycle. Rights issue activity however does not exhibit the same cyclical pattern. Rights issuance volume is not significantly higher during the upturn of the business cycle mainly because of the very high SEO activity in the last phase of the downturn of the business cycle.

The magnitude of adverse selection costs associated with the equity issues affects only the timing of rights issues. More firms make a SEO in the UK when these costs are low. In addition more capital is raised from rights issues when adverse selection costs are low. The timing of IPOs and equity financed takeover bids however is not related with the magnitude of adverse selection costs.

Exploitation of overvaluation is a major driving force of IPO activity with more capital raised from IPOs during periods when share prices are more overvalued. The timing of rights issues and equity financed takeover bids however is not driven by deliberate exploiting overvaluation. Periods when SEO and equity financed takeover activity is high are not periods when these issuers are more overvalued than periods when equity issuance activity is low.

Favourable investors sentiment is a major driving force behind the timing of equity issues. More capital is raised from IPOs and SEOs when analysts are more overoptimistic for recent issuers. Issuers seem to be able to time their issues when market sentiment for equity issuers is particularly favourable. Variations in this sentiment create variations in equity issuance activity.

TABLE 10.1:SUMMARY RESULTS OF THE IMPACT OF BUSINESS CONDITIONS, ADVERSE SELECTION COSTS, OVERVALUATION EXPLOITATION AND FAVOURABLE INVESTORS SENTIMENT ON THE TIMING OF IPOs, SEOs AND TAKEOVER BIDS THAT ARE FINANCED WITH EQUITY.

Factor that may affect the timing of equity issues	Initial Public Offerings	Seasoned Equity Offerings	Takeover bids that are financed with equity
Business Conditions	Significant Positive Impact. More firms make an IPO and more capital is raised during the upturn of the business cycle	No significant impact	Significant Positive Impact. More bidders use equity to finance a takeover bid during the upturn of the business cycle.
Adverse selection costs	No significant impact	Negative Impact. When adverse selection costs are high, SEO activity is significantly lower	No significant impact
Overvaluation exploitation timing	Significant impact. More capital is raised when IPOs are more overvalued	No significant impact	No significant impact
Favourable investors' sentiment and analysts' earnings optimism	Significant impact. More capital is raised when analysts' earnings overoptimism for recent IPOs is high or earnings pessimism for recent IPOs is low	Significant impact. More capital is raised when analysts' earnings overoptimism for recent issuers is high	Not investigated

Overall, the timing of Initial Public Offerings seems to be more opportunistic. Issuers seem to be able to time the IPO when share price and investors' sentiment is high. For a firm that is already listed, an equity issue does not seem to be driven by the same degree of opportunism. Rights issuers in the UK are able to time the issue during periods when investors sentiment is favourable and after a good performance.

On the other hand, the use of equity to finance a takeover bid seems to be driven by factors other from those that our research has investigated.

10.2. CONTRIBUTIONS OF THE THESIS.

This thesis has investigated many areas that have not been previously researched. The thesis has extended the literature by documenting the relation between adverse selection costs and the volume of rights issues and equity financed takeover bids in the UK. We also uncovered the magnitude of analysts overoptimism around equity issues and its effect on the timing of equity issues, areas where only international but no UK studies exist.

Using theories developed in US and applying them in a different dataset, we investigated the effect of the state of the business cycle on the magnitude of adverse selection costs for IPOs, SEOs and takeover bids that are financed with equity.

The use of industry/market to book value and industry/ market value adjusted long run performances that we use in the thesis represent the latest and most widely approved way of calculating the long run performance and although we use it a tool to for specific tests represent in itself a major contribution of the thesis. The relation between equity issue activity and the long run performance and the stylised approach on the classification of periods as Heavy and Light is a further contribution.

The use of financial analysts forecast revisions for UK rights issues and IPOs is also a part of this research with originality. No study has documented how analysts react on the announcement of a rights issue and how they revise their earnings forecasts.

The most important contribution of the thesis is that it investigates the general issue of whether the timing of three corporate activities is dictated by the same factors. We wanted to uncover the degree of unification and commonality between the three corporate activities.

10.3. DIRECTIONS FOR FUTURE RESEARCH.

The part that we believe can provide the motivation for future researchers is the use of financial analysts earnings forecasts to try to explain why firm that make an equity issue underperform. We find evidence that more capital is raised form IPOs and SEOs when analysts are more overoptimistic about the earnings of recent issuers.

We feel that future research will establish a coherent relation between analysts forecast earnings surprises, forecast revisions and long run underperformance.

Our analysis indicates that as analysts become more overoptimistic for the earnings of recent issuers, more capital is raised from IPOs and SEOs. The number of earnings forecasts however is limited and that may cause problems if the analysts do not choose the firms for which they will provide forecasts at random. Analyst may seek to forecast the earnings of firms that they believe they have good growth potentials and leave out firms with limited growth potentials. Furthermore, these overoptimistic forecasts may be made by affiliated analysts who are pressured by their employers to "help" the issues by forecasting good prospects. Herding theories argue that analysts look at other analysts forecasts in order to estimate their own forecasts. Therefore unaffiliated analysts may look at the forecasts of affiliated analysts and adjust their own forecasts accordingly. In other words the analyst overoptimism for recent issuers may not be a wide spread phenomenon for all analysts but may be driven by agency costs. Future research may be able to disentangle the effect of analysts overoptimism for recent issuers from agency problems by looking at forecasts made only by unaffiliated analysts.

Apart from a look at earnings, future researchers should in our opinion, take a closer look at other accounting information and especially to look how IPOs perform relative to the expectations. Profitability is an important aspect that can affect the valuation of firms but other measures such as sales, assets and other accounting information can be used to judge whether IPO firms or SEO firms perform according to expectations or not.

Especially in the case of equity financed takeover bids and the big difference in their post announcement performance relative to cash offers more accounting information have to be used to try and identified other factors that could be responsible for such a huge difference. Most important, future research must concentrate on the quality of the bids and the synergistic gains that arise from equity or cash financed bids.

The area of rights issue announcements also offers opportunities for future research especially in order to understand the negative price reaction that occurs on the announcement day. In UK some rights issues are announced together with earnings and therefore the market may reacts for both events. If future research can identify which rights issues are not announced together with earnings or disentangles the effect that earnings announcements have on the share price from the effect of the rights issue announcement, then more clear conclusions can be drown as to what forces are behind the significant negative price reaction.

Finally we believe that we made a great effort to gather as many firm specific variables that can explain the announcement period abnormal returns of rights issues and takeover bid announcements and first day returns. It is outside our limits however to account for all factors and therefore future researchers with greater data availability should be able to test our hypothesis with greater statistical power.

APPENDIX

1) Suppose that we have a firm with 5000 shares valued at £1 each and with only two shareholders. The first shareholder has 2000 shares or 40% of the value of the firm and the second shareholder has 3000 shares or 60% of the firm. If the firm makes an issue of 2 new shares for every 5 old for £0.50 each the first shareholder will take 800 shares by paying £ 400 and the second one will take 1200 shares by paying £ 600. After the issue the total value of the firm will be £ 6000 (£5000 +£1000 from the issue) and so with 7000 shares the share price will be £0.8571. With such a price the first shareholder will have 2800 shares or £ 2400 and the second shareholder will have 4200 shares or £ 3600. The first shareholder will still have 40 % of the firm and the second shareholder will still have 60% of the firm. They both did not gain or lose anything. If the first shareholder did not exercise his/her rights he/she could sell the rights in the market at an equilibrium price of 14.28 pence per share. In that case a new shareholder would pay this price for the 2000 rights of the first shareholder or £285.71 and take 800 shares by paying £400. The new shareholder's value of shares would be 285.71+ 400 = 685.71. The first shareholder would now continue to have 2000 shares now valued at £0.8571 or total value of shares 1714.28 but will also receive £ 285.71 from the new shareholder or £ 2000 in total. He did not gain or lose anything.

Even if the price of the new share was £0.80 instead of £ 0.50 things would not change. The only difference would that the total value of the company after the issue would be £ 6600 instead of £6000 and the first shareholder would hold £ 2640 worth of shares and the second would hold £ 3960 worth of shares. Their percentage holdings would still be 40% and 60% respectively.

2)

forecast revision over the offer price at month 2 = (11-10)/100* = 0.01

forecast revision over the offer price at month 60 = (11-10)/100*= 0.01

* offer price is 100 p

forecast revisions over the current share price at month 2 = (11-10)/101.6**= 0.0098

forecast revisions over the current share price at month 60 = (11-10)/160**= 0.0062

**for simplicity we assume that the share price increases by 10% per annum and so increases to 101.6 after two months and 160 after 5 years.

3) EQUAL WEIGHTED AVERAGE FORECAST REVISION

forecast revision of firm A with an offer price of 50p at month 2 = (11-10)/50= 0.02

forecast revision of firm B with an offer price of 500p at month 2 =(11-10)/500= 0.002

EQUAL AVERAGE FORECAST REVISION = 0.011

PRICE WEIGHTED FORECAST REVISIONS

forecast revision of firm A with an offer price of 50p at month 2 = (11-10)/50= 0.02

forecast revision of firm B with an offer price of 500p at month 2=(11-10)/500= 0.002

weight for firm A = 50 /(50+500) = 0.09

weight for firm 5= 500/(50+500) = 0.91

PRICE WEIGHTED FORECAST REVISIONS = (0.02)*0.09 + (0.002)*0.91 = **0.00362**

4)

The dependent variable is the amount of capital raised from IPOs per month in Dec 196 prices.

The independent variables are the average forecast errors (both adjusted and unadjusted) analysts made for the IPOs in forecasting their earnings during their first public year that came into the market in the previous 12 months. It is a time series regression using monthly data starting from January 1988 to December 1996.

	IPO proceeds (in £m)	Error made for Recent IPOs (adjusted)	Error made for Recent IPOs (unadjusted)	Error made for the Whole market
Jan-87	6.328			
Feb-87	5.073			
Mar-87	141.576			
Apr-87	133.121			
May-87	50.667			
Jun-87	110.196			
Jul-87	201.407			
Aug-87	5.730			
Sep-87	12.902			
Oct-87	123.843			
Nov-87	10.919			
Dec-87	11.426			
Jan-88	19.487	0.00070	-0.00014	-0.00108
Feb-88	247.479	0.00079	0.00204	-0.00066
Mar-88	117.685	0.00097	0.00214	-0.00121
Apr-88	118.465	0.00149	0.00252	-0.00090
May-88	82.909	0.00131	0.00207	-0.00060
Jun-88	283.898	0.00133	0.00262	-0.00057
Jul-88	155.342	0.00114	0.00270	-0.00074
Aug-88	22.073	0.00114	0.00197	-0.00065
Sep-88	29.348	0.00122	0.00234	-0.00066
Oct-88	516.411	0.00110	0.00234	-0.00076
Nov-88	55.688	0.00128	0.00223	-0.00074
Dec-88	157.284	0.00121	0.00200	-0.00069

This is the average error analysts made during the period Jan 1987 to Dec 1987

There are some months when one or even no forecasts are made and other when 10 forecast have been made. To avoid giving the same weight to a month with 1 forecast and to the month with 10 forecasts we calculated the average forecast error of the previous 12 months as the average of <u>all forecast</u> made during the previous 12 month (eg for the Jan 95, the average of all 18 forecast that were made during the Jan 94 to Dec 94) and not the average of the previous 12 monthly averages.

This is the average error analysts made during the period Feb 1987 to Jan 1988 for IPOs

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Appendix 8.1

Descriptive Statistics for Financial Analysts Earnings Forecasts Errors Made for All Firms Covered in I/B/E/S

The sample consists of all firms for which forecasts for the current year earnings were available from I/B/E/S in the period Jan 1987 to Dec1998. The Horizon of the forecast refers to the period in months between the time the forecast is made and the announcement of the current year earnings. The errors are calculated as the difference between the Actual Earnings per share and the Forecasted earnings per share divided over the share price at the time the forecast is made. The t-statistic for the difference from zero is calculated from the formula $t = \bar{x} / (s / \sqrt{n})$. The t-stats of the difference between two forecast horizons is calculated as $t = (\bar{x} - \bar{y}) / \sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}$

			FULL SAMPLE OF ERRORS OVER PRICES									
	Forecast Horizon 1 month	Forecast Horizon 2 months	Forecast Horizon 3 months	Forecast Horizon 4 months	Forecast Horizon 5 months	Forecast Horizon 6 months	Forecast Horizon 7 months	Forecast Horizon 8 months	Forecast Horizon 9 months	Forecast Horizon 10 months	Forecast Horizon 11 months	Forecast Horizon 1 months
Average Forecast Error	-0.016	-0.018	-0.026	-0.029	-0.025	-0.028	-0.029	-0.030	-0.032	-0.034	-0.035	-0.039
Median Forecast Error	0	0.000446	0.000523	0.000343	0	0	-0.00049	-0.00095	-0.0014	-0.0019	-0.00222	-0.00295
maximum Forecast Error	4.2	4.2	4.2	3.73	4.2	4.2	2.8	8.4	2.8	1.08	1.28	1.19
Minimum Forecast Error	-9.500	-10.231	-68.344	-91.156	-40.324	-44.635	-31.797	-23.498	-29.397	-39.163	-24.718	-27.467
standard deviation	0.219	0.237	0.728	0.951	0.463	0.518	0.407	0.352	0.409	0.483	0.380	0.442
TOTAL NUMBER OF OBSERVATIONS	10149	9910	9784	9622	9431	9203	9055	8864	8638	8253	7514	5342
Percentage OF POSITIVE ERRORS	47.2%	53.1%	53.3%	51.6%	49.7%	47.6%	45.7%	39.7%	43.5%	42.3%	41.4%	39.6%
Percentage OF ZERO ERRORS	20.8%	9.2%	5.4%	4.0%	3.4%	3.0%	2.5%	1.8%	1.6%	1.6%	1.5%	1.4%
Percentage OF NEGATIVE ERRORS	32.0%	37.7%	41.3%	44.4%	46.9%	49.4%	51.8%	58.5%	54.9%	56.1%	57.1%	59.0%
t stat (difference from zero)	-7.25	-7.69	-3.49	-2.97	-5.22	-5.24	-6.87	-8.03	-7.29	-6.54	-8.00	-6.52
t stat (difference from shorter forecast horizon)		-0.78	-0.95	-0.26	0.36	-0.48	-0.16	-0.10	-0.36	-0.39	-0.05	-0.58

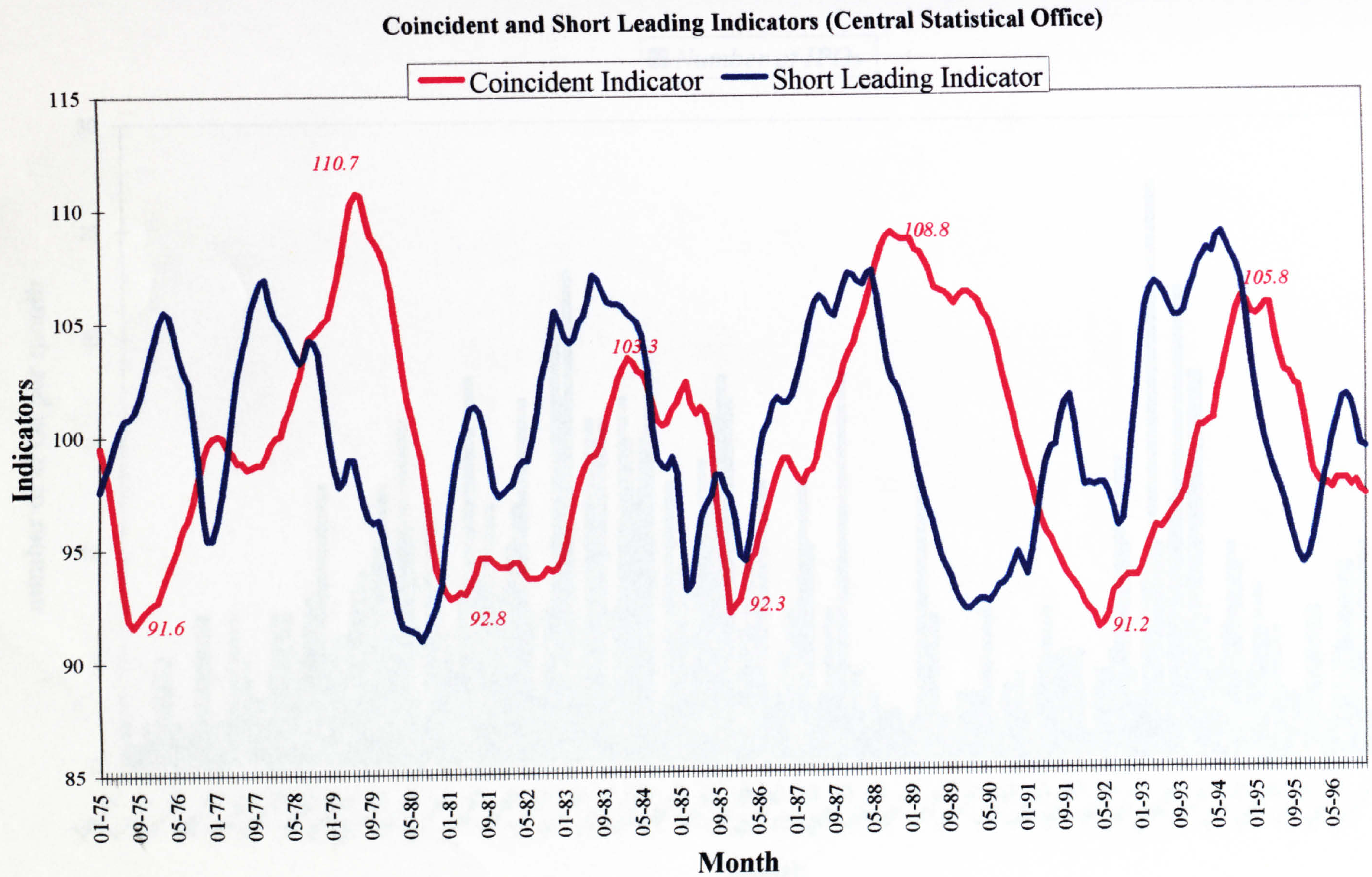
			ERRORS OVER PRICE (NO OUTLIERS OVER AND BELOW 3 STANDARD DEVIATIONS FROM THE MEAN)									
	Forecast Horizon 1 month	Forecast Horizon 2 months	Forecast Horizon 3 months	Forecast Horizon 4 months	Forecast Horizon 5 months	Forecast Horizon 6 months	Forecast Horizon 7 months	Forecast Horizon 8 months	Forecast Horizon 9 months	Forecast Horizon 10 months	Forecast Horizon 11 months	Forecast Horizon 12 month
Average Forecast Error	-0.005	-0.006	-0.012	-0.014	-0.012	-0.014	-0.015	-0.016	-0.018	-0.020	-0.019	-0.024
Median Forecast Error	0	0.0005	0.0005	0.0003	0	0	-0.0005	-0.0009	-0.0014	-0.0019	-0.0021	-0.0029
maximum Forecast Error	0.38	0.39	1.5825	1.3	1.1355	1.3	1.0929	1.0034	0.9932	1.0809	0.6894	1.1952
Minimum Forecast Error	-0.65	-0.73	-2.10	-2.69	-1.40	-1.55	-1.21	-1.05	-1.22	-1.48	-1.14	-1.30
standard deviations	0.046	0.050	0.106	0.119	0.080	0.088	0.083	0.078	0.084	0.094	0.080	0.102
TOTAL NUMBER OF OBSERVATIONS	10087	9846	9768	9610	9401	9176	9022	8824	8604	8228	7480	5325
Percentage OF POSITIVE ERRORS	47.5%	53.4%	53.4%	51.7%	49.8%	47.7%	45.9%	44.6%	43.6%	42.4%	41.6%	39.7%
Percentage OF ZERO ERRORS	21.0%	9.4%	5.5%	4.0%	3.4%	3.1%	2.5%	1.9%	1.6%	1.6%	1.5%	1.4%
Percentage OF NEGATIVE ERRORS	31.5%	37.3%	41.1%	44.3%	46.7%	49.2%	51.6%	53.5%	54.7%	55.9%	56.9%	58.8%
t stat (difference from zero)	-10.99	-12.61	-11.49	-12.05	-15.30	-15.91	-17.74	-20.08	-20.26	-20.11	-21.23	-17.29
t stat (difference from shorter forecast horizon)		-2.01	-5.01	-1.46	1.34	-1.59	-0.65	-1.05	-1.37	-1.69	0.82	-2.69

			ERRORS OVER PRICE (NO OUTLIERS CURTAILED AT 1% AT EACH TAIL)									
	Forecast Horizon 1 month	Forecast Horizon 2 months	Forecast Horizon 3 months	Forecast Horizon 4 months	Forecast Horizon 5 months	Forecast Horizon 6 months	Forecast Horizon 7 months	Forecast Horizon 8 months	Forecast Horizon 9 months	Forecast Horizon 10 months	Forecast Horizon 11 months	Forecast Horizon 12 month
Average Forecast Error	-0.00385	-0.00516	-0.00629	-0.00756	-0.00916	-0.01068	-0.01251	-0.01438	-0.01521	-0.01632	-0.01683	-0.01997
Median Forecast Error	0	0.0004	0.0005	0.0003	0	0	-0.0005	-0.0009	-0.0014	-0.0019	-0.0022	-0.003
maximum Forecast Error	0.05	0.05	0.05	0.05	0.05	0.05	0.06	0.06	0.06	0.06	0.06	0.06
Minimum Forecast Error	-0.39	-0.40	-0.42	-0.45	-0.49	-0.49	-0.49	-0.52	-0.52	-0.55	-0.52	-0.67
standard deviations	0.0294	0.0343	0.0379	0.0403	0.0437	0.0461	0.0492	0.0526	0.0526	0.0540	0.0532	0.0635
TOTAL NUMBER OF OBSERVATIONS	9947	9711	9591	9431	9244	9020	8876	8689	8465	8090	7365	5238
Percentage OF POSITIVE ERRORS	47.2%	53.1%	53.4%	41.7%	49.7%	46.4%	45.6%	44.3%	43.3%	42.2%	41.2%	39.4%
Percentage OF ZERO ERRORS	21.3%	9.5%	5.6%	4.1%	3.5%	3.2%	2.6%	1.9%	1.7%	1.6%	1.5%	1.5%
Percentage OF NEGATIVE ERRORS	31.5%	37.4%	41.0%	44.2%	46.8%	49.3%	51.8%	53.8%	55.0%	56.2%	57.2%	59.1%
t stat (difference from zero)	-13.09	-14.84	-16.27	-18.22	-20.14	-21.99	-23.95	-25.51	-26.58	-27.21	-27.18	-22.77
t stat (difference from shorter forecast horizon)		-2.88	-2.17	-2.23	-2.61	-2.28	-2.56	-2.45	-1.03	-1.34	-0.59	-2.92

[i] That is
{(-0.001)+ (-0.001)+(-0.001)+(-0.001)+(-0.001)+(-0.001)+(-0.002) +(-0.002) +(-0.002) +(-0.002)+(-0.002)+(-0.002)}/12

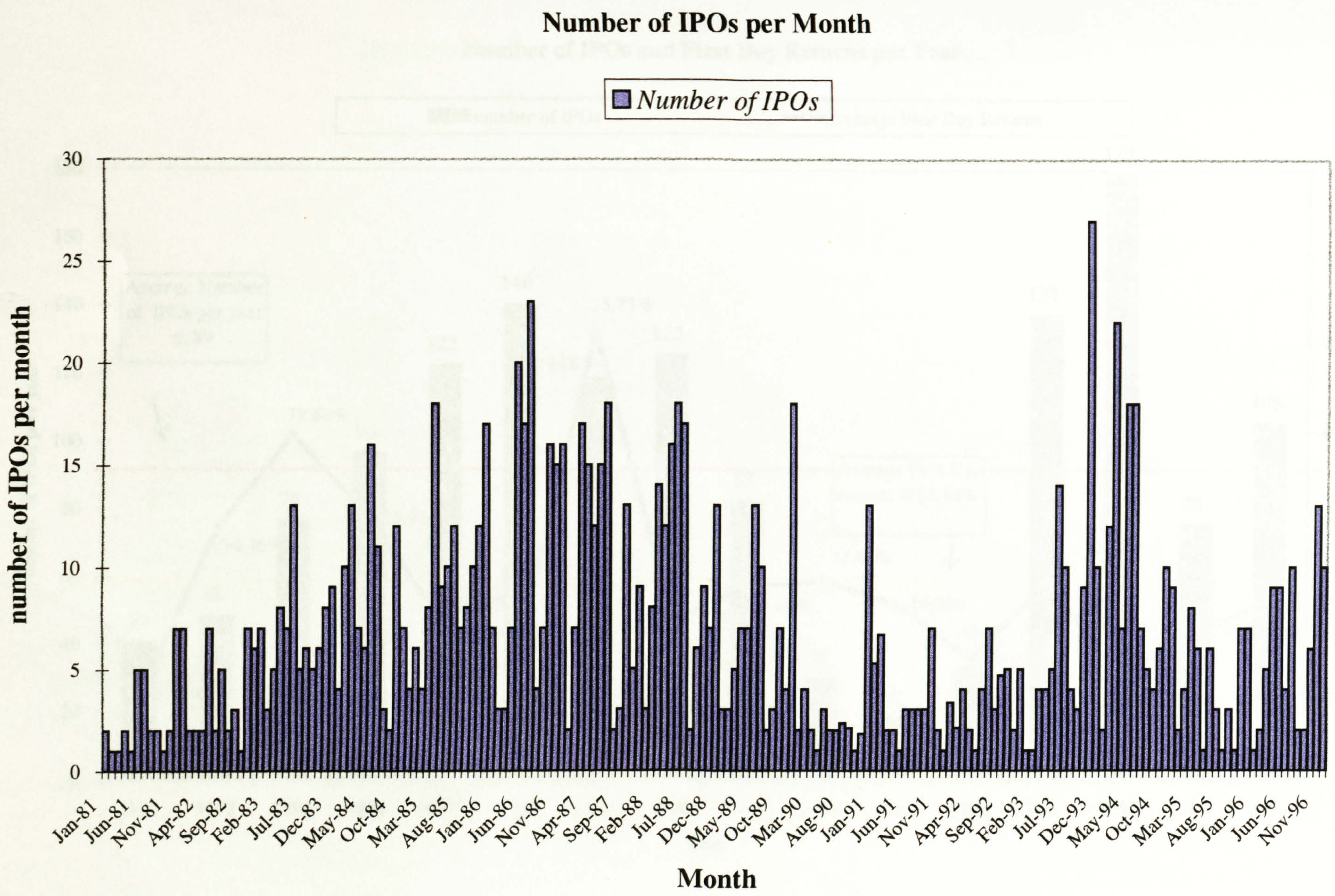
[ii] That is
{[5*(-0.001)]+ [5*(-0.001)]+[5*(-0.001)] +[5*(-0.001)] +[5*(-0.001)] +[5*(-0.001)] +[20*(-0.002)] +[20*(-0.002)] +[20*(-0.002)] +[20*(-0.002)] +[20*(-0.002)] +[20*(-0.002)] }/ [5+5+5+5+5+5+20+20+20+20+20+20]

Figure 4.1



Coincident and Short Leading Indicators (Central Statistical Office)
Coincident Indicator
Short Leading Indicator
Indicators
115
110
105
100
95
90
85
110.7
108.8
105.8
103.3
92.8
92.3
91.6
91.2
01-75
09-75
05-76
01-77
09-77
05-78
01-79
09-79
05-80
01-81
09-81
05-82
01-83
09-83
05-84
01-85
09-85
05-86
01-87
09-87
05-88
01-89
09-89
05-90
01-91
09-91
05-92
01-93
09-93
05-94
01-95
09-95
05-96
Month

Figure 5.1



Number of IPOs per Month
Number of IPOs
number of IPOs per month
30
25
20
15
10
5
0
Jan-81
Jun-81
Nov-81
Apr-82
Sep-82
Feb-83
Jul-83
Dec-83
May-84
Oct-84
Mar-85
Aug-85
Jan-86
Jun-86
Nov-86
Apr-87
Sep-87
Feb-88
Jul-88
Dec-88
May-89
Oct-89
Mar-90
Aug-90
Jan-91
Jun-91
Nov-91
Apr-92
Sep-92
Feb-93
Jul-93
Dec-93
May-94
Oct-94
Mar-95
Aug-95
Jan-96
Jun-96
Nov-96
Month

Figure 5.2

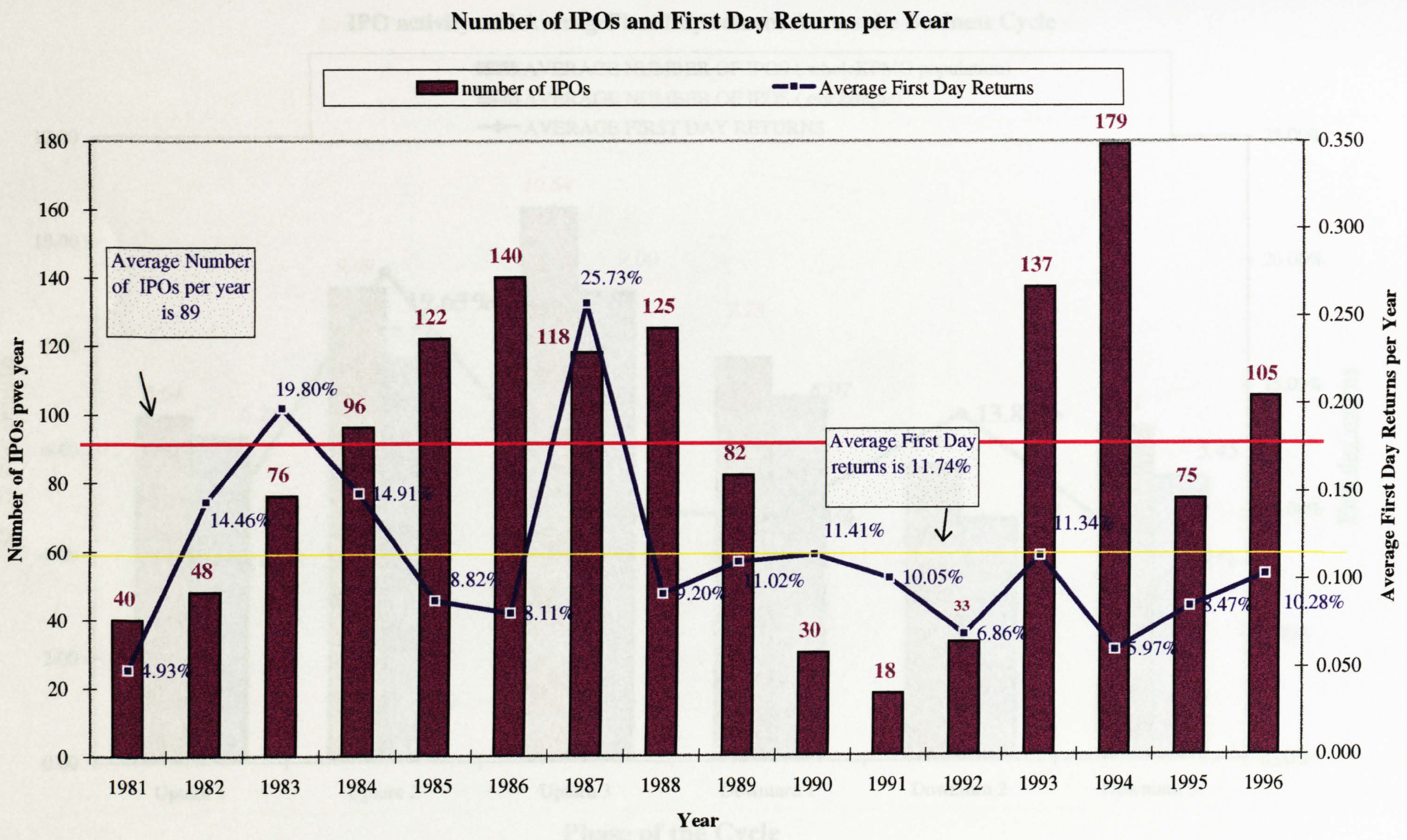

Number of IPOs and First Day Returns per Year
number of IPOs
Average First Day Returns
Average Number of IPOs per year is 89
Average First Day returns is 11.74%
Number of IPOs pwe year
Average First Day Returns per Year
Year
180
160
140
120
100
80
60
40
20
0
0.350
0.300
0.250
0.200
0.150
0.100
0.050
0.000
1981
1982
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
40
48
76
96
122
140
118
125
82
30
18
33
137
179
75
105
4.93%
14.46%
19.80%
14.91%
8.82%
8.11%
25.73%
9.20%
11.02%
11.41%
10.05%
6.86%
11.34%
5.97%
8.47%
10.28%

Figure 5.3

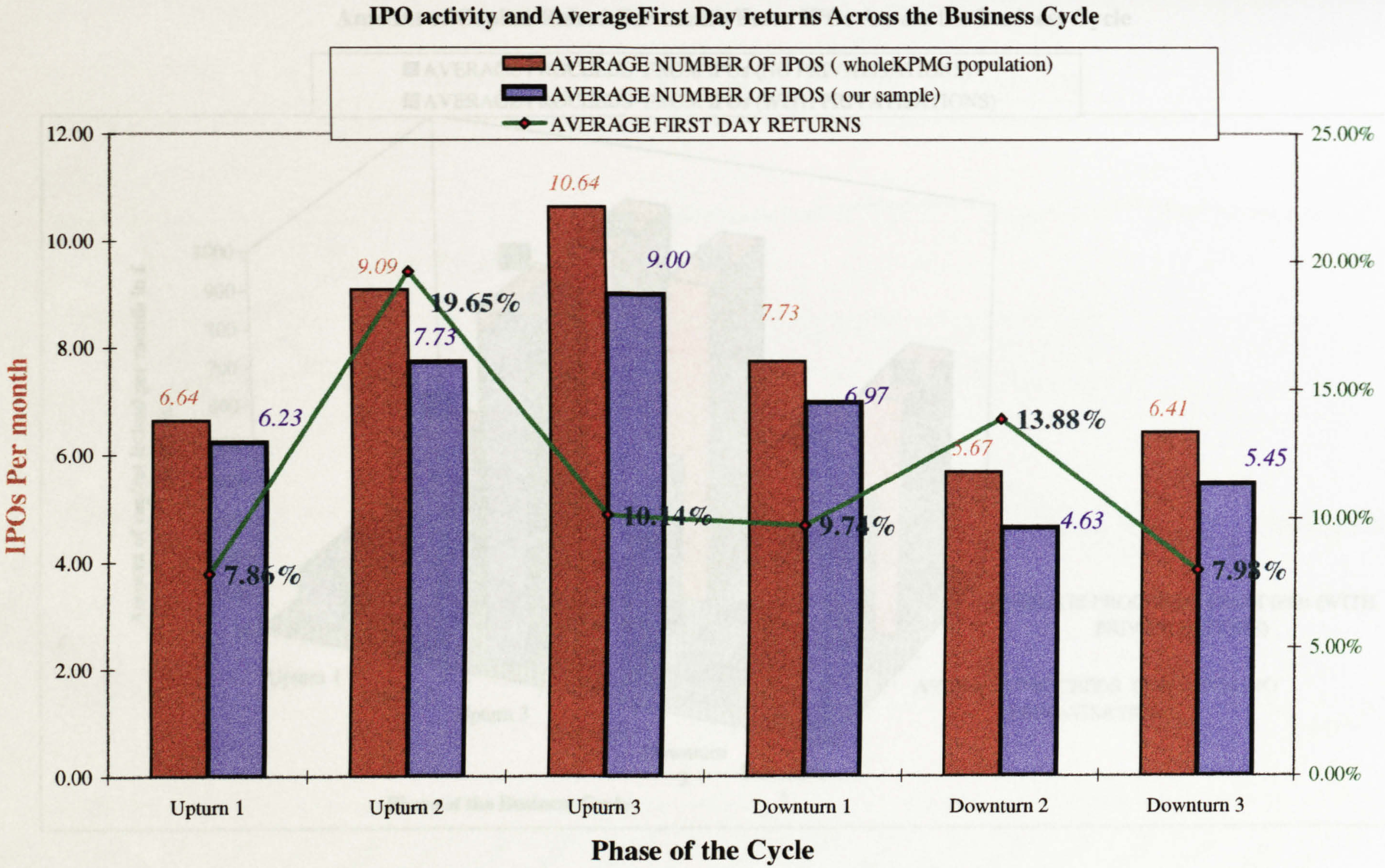
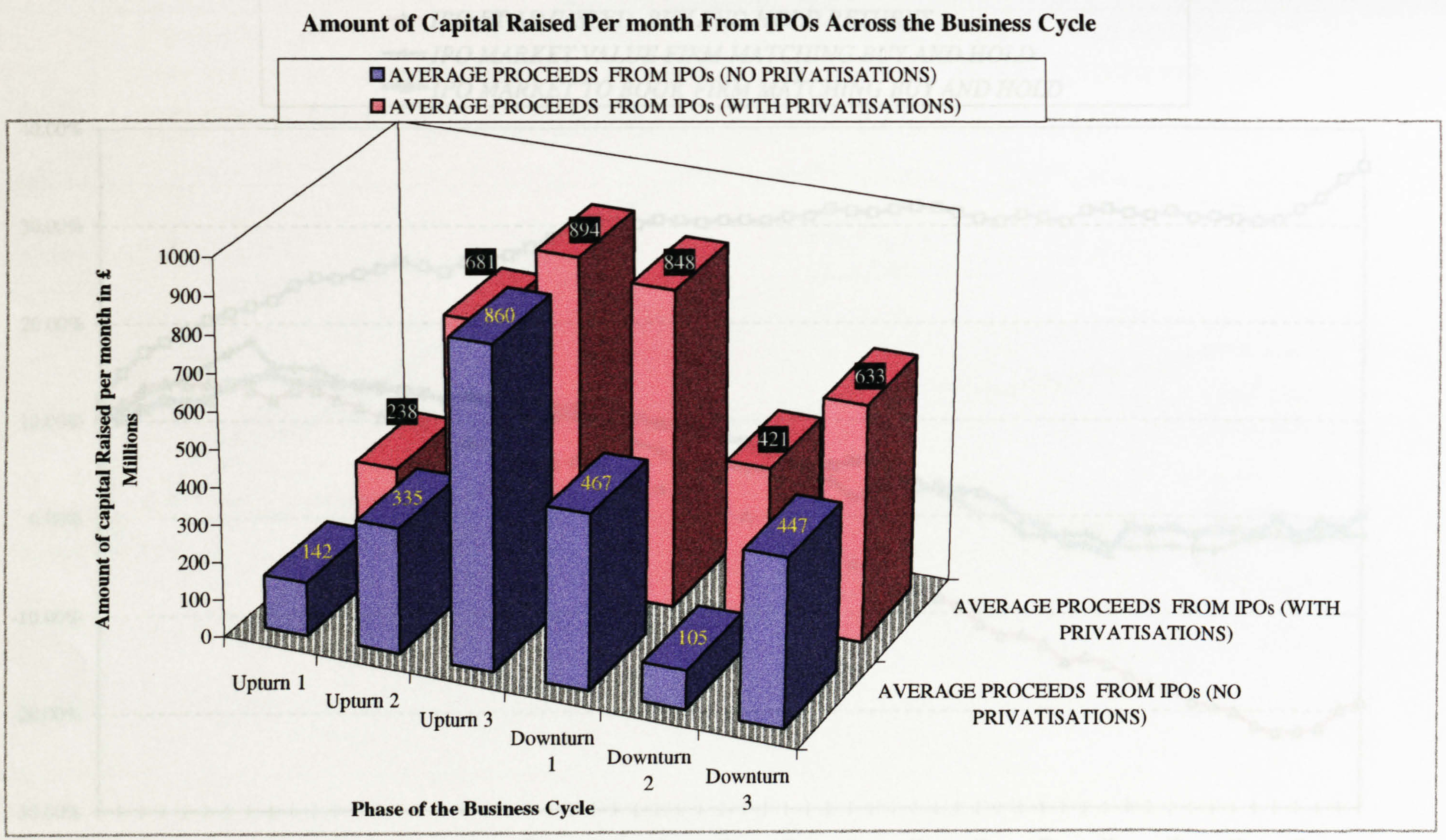

IPO activity and AverageFirst Day returns Across the Business Cycle
AVERAGE NUMBER OF IPOS (wholeKPMG population)
AVERAGE NUMBER OF IPOS (our sample)
AVERAGE FIRST DAY RETURNS
IPOs Per month
First day returns
Phase of the Cycle
12.00
10.00
8.00
6.00
4.00
2.00
0.00
25.00%
20.00%
15.00%
10.00%
5.00%
0.00%
Upturn 1
Upturn 2
Upturn 3
Downturn 1
Downturn 2
Downturn 3
6.64
6.23
7.86%
9.09
7.73
19.65%
10.64
9.00
10.14%
7.73
6.97
9.74%
5.67
4.63
13.88%
6.41
5.45
7.98%

Figure 5.3a



Amount of Capital Raised Per month From IPOs Across the Business Cycle
AVERAGE PROCEEDS FROM IPOs (NO PRIVATISATIONS)
AVERAGE PROCEEDS FROM IPOs (WITH PRIVATISATIONS)
Amount of capital Raised per month in £ Millions
1000
900
800
700
600
500
400
300
200
100
0
142
335
860
467
105
447
238
681
894
848
421
633
Upturn 1
Upturn 2
Upturn 3
Downturn 1
Downturn 2
Downturn 3
Phase of the Business Cycle
AVERAGE PROCEEDS FROM IPOs (WITH PRIVATISATIONS)
AVERAGE PROCEEDS FROM IPOs (NO PRIVATISATIONS)

Page
numbering
as
found in the
original
thesis

Figure 5.5
Post-IPO Performance

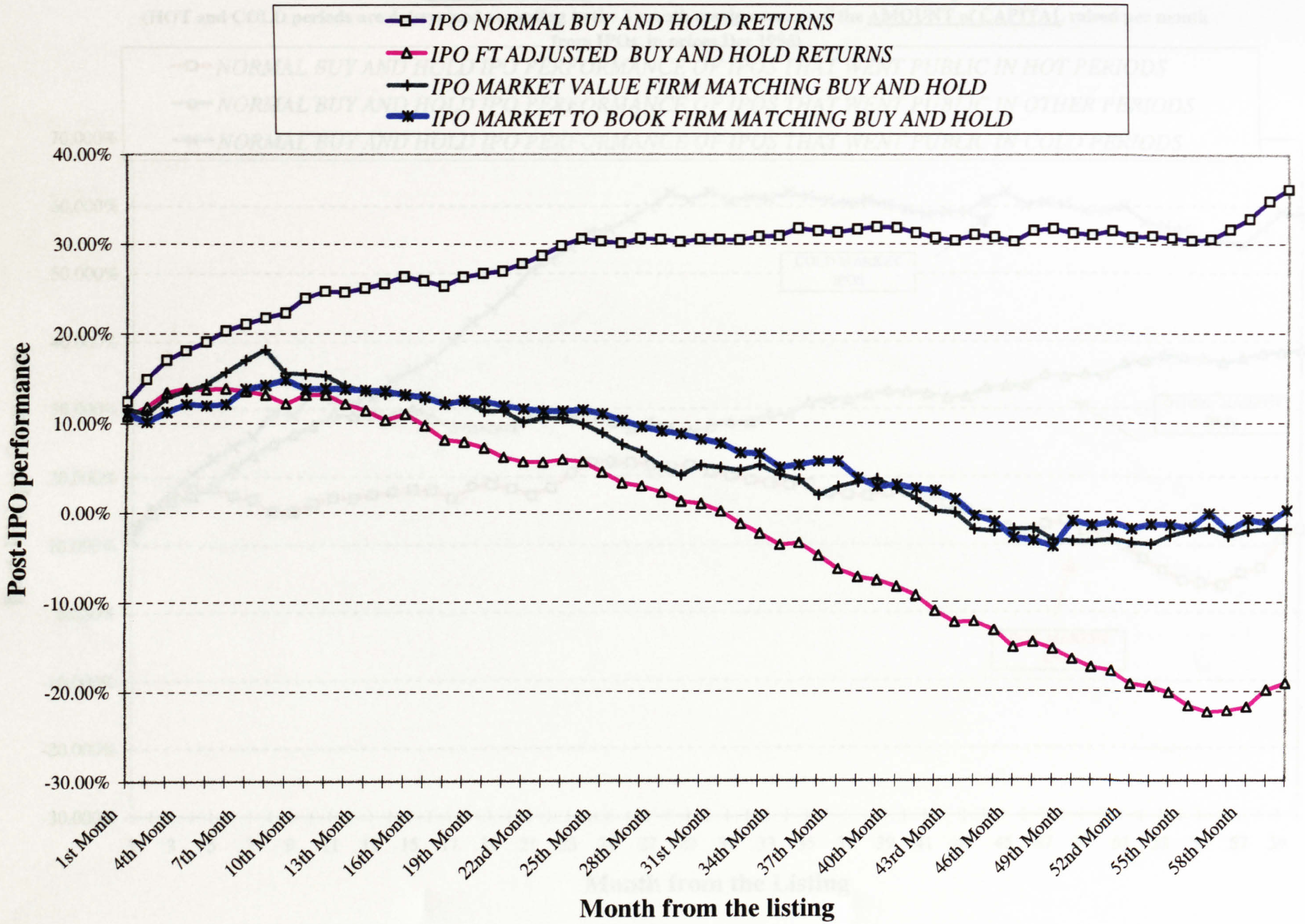


Figure 5.6

Post IPO Buy and HOLD performance across HOT and COLD periods

(HOT and COLD periods are determined according to the 3 month movig average of the AMOUNT of CAPITAL raised per month from IPOs in prices Dec 1996)

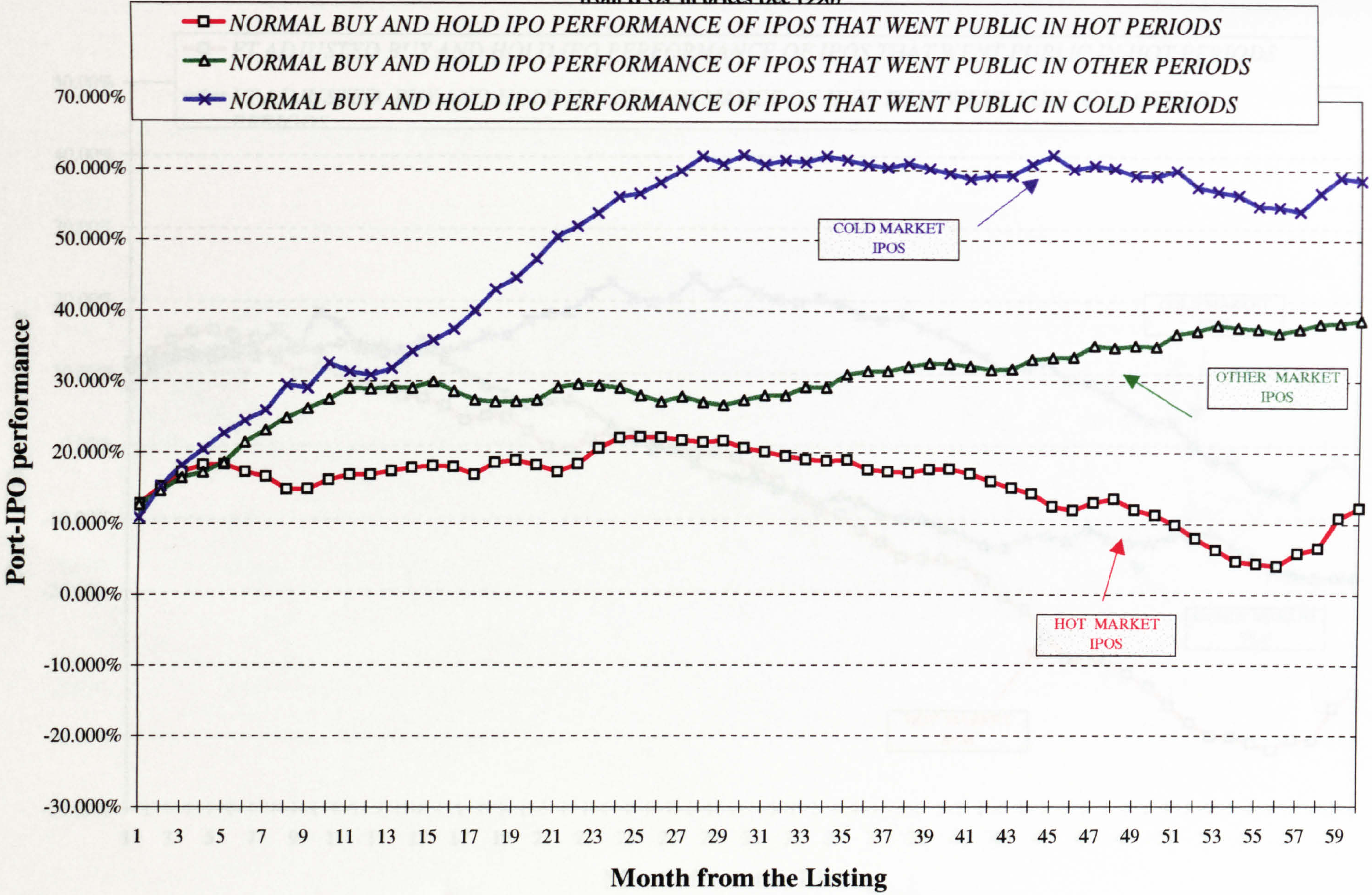


Figure 5.7

Post IPO FT ADJUSTED BUY and HOLD performance across HOT and COLD periods

(HOT and COLD periods are determined according to the 3 month moving average of the AMOUNT of CAPITAL raised per month)

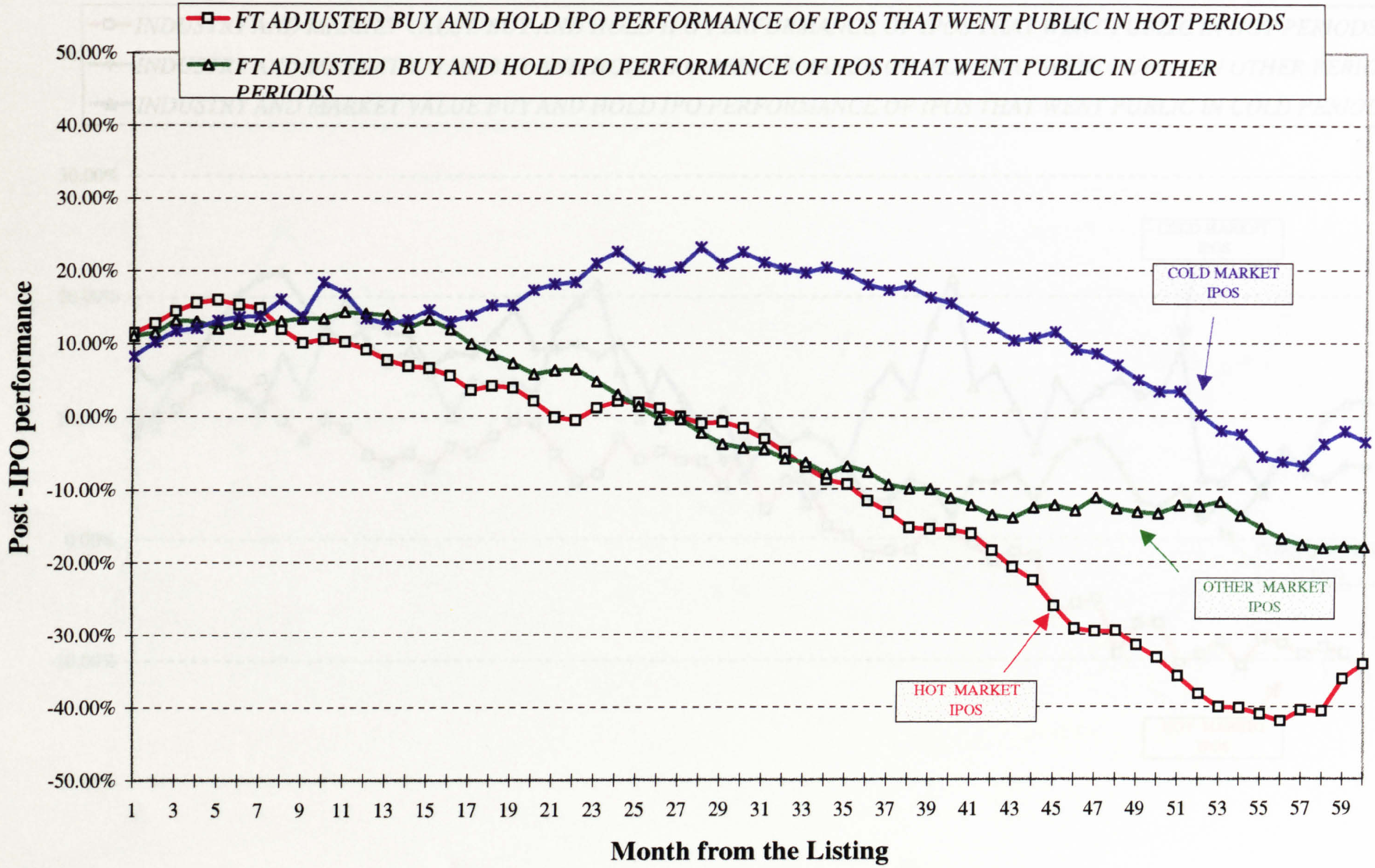


Figure 5.8

Post IPO BUY and HOLD performance MATCHED BY INDUSTRY AND MARKET VALUE across HOT and COLD periods

(HOT and COLD periods are determined according to the 3 month moving average of the AMOUNT of CAPITAL raised per month)

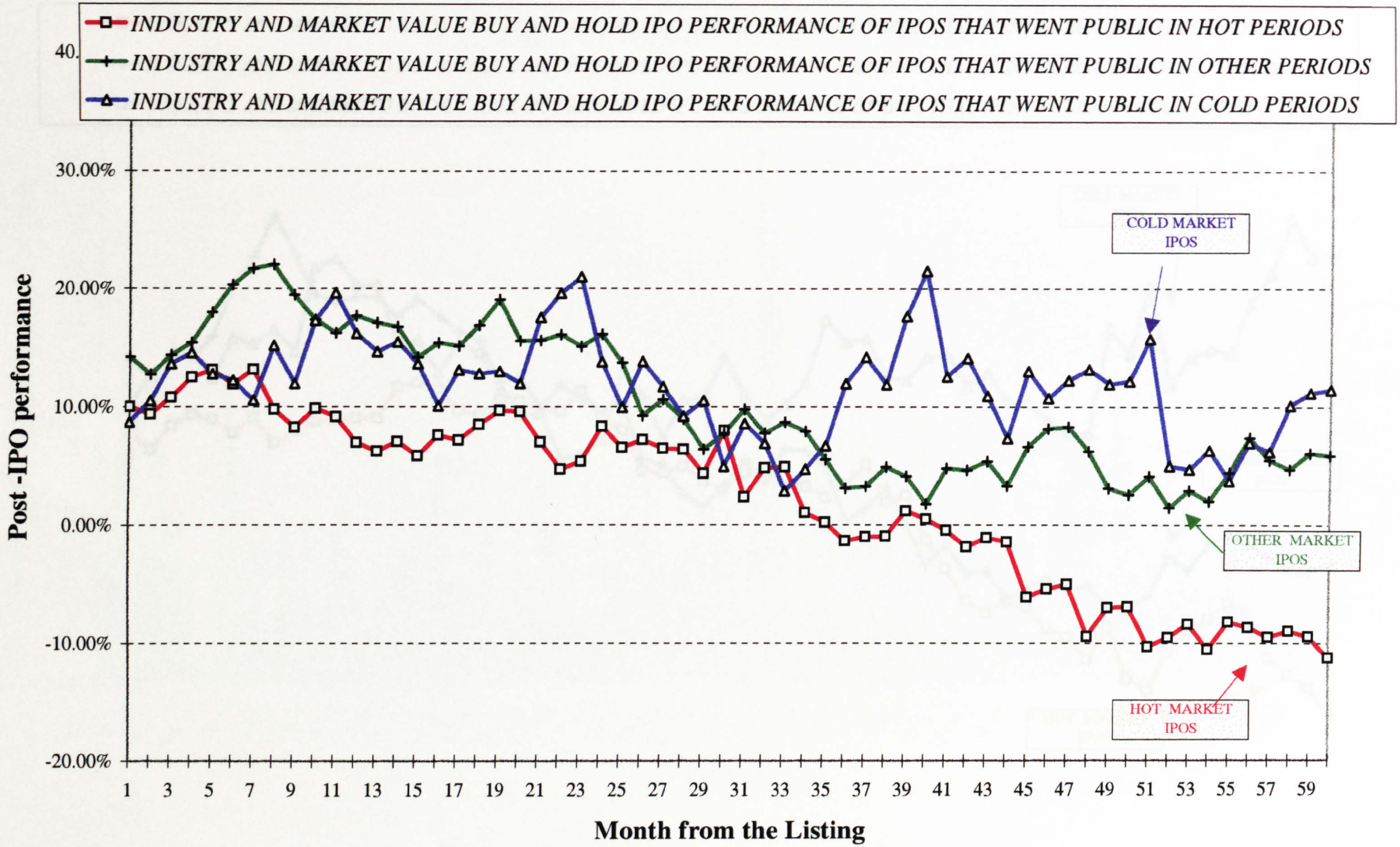


Figure 5.9

Post IPO performance (MATCHED BY INDUSTRY AND MARKET TO BOOK VALUE) across HOT and COLD periods

(HOT and COLD periods are determined according to the 3 month moving average of the AMOUNT of CAPITAL raised per month)

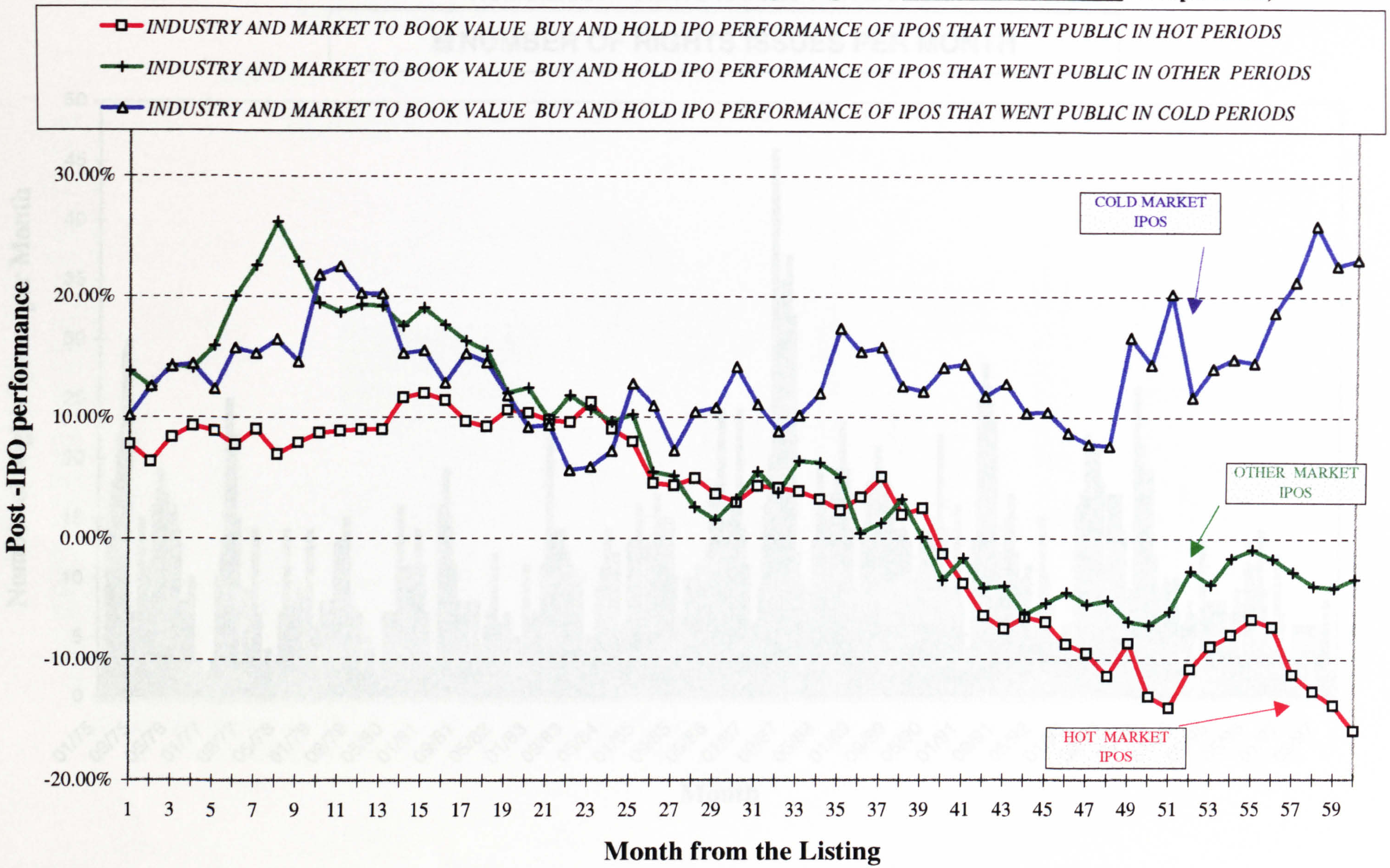


Figure 6.1

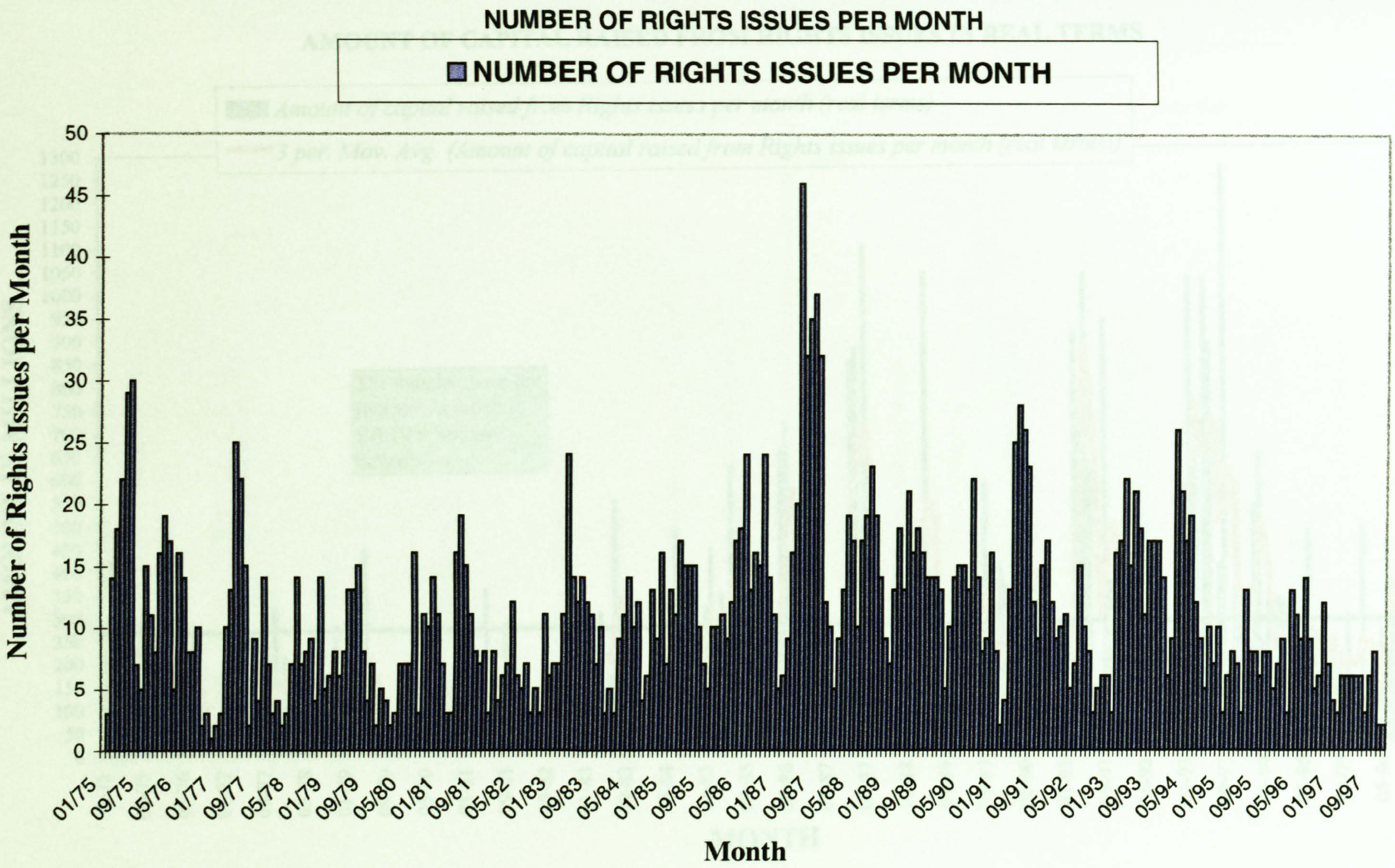

NUMBER OF RIGHTS ISSUES PER MONTH
NUMBER OF RIGHTS ISSUES PER MONTH
Number of Rights Issues per Month
0
5
10
15
20
25
30
35
40
45
50
01/75
09/75
05/76
01/77
09/77
05/78
01/79
09/79
05/80
01/81
09/81
05/82
01/83
09/83
05/84
01/85
09/85
05/86
01/87
09/87
05/88
01/89
09/89
05/90
01/91
09/91
05/92
01/93
09/93
05/94
01/95
09/95
05/96
01/97
09/97
Month

Figure 6.2

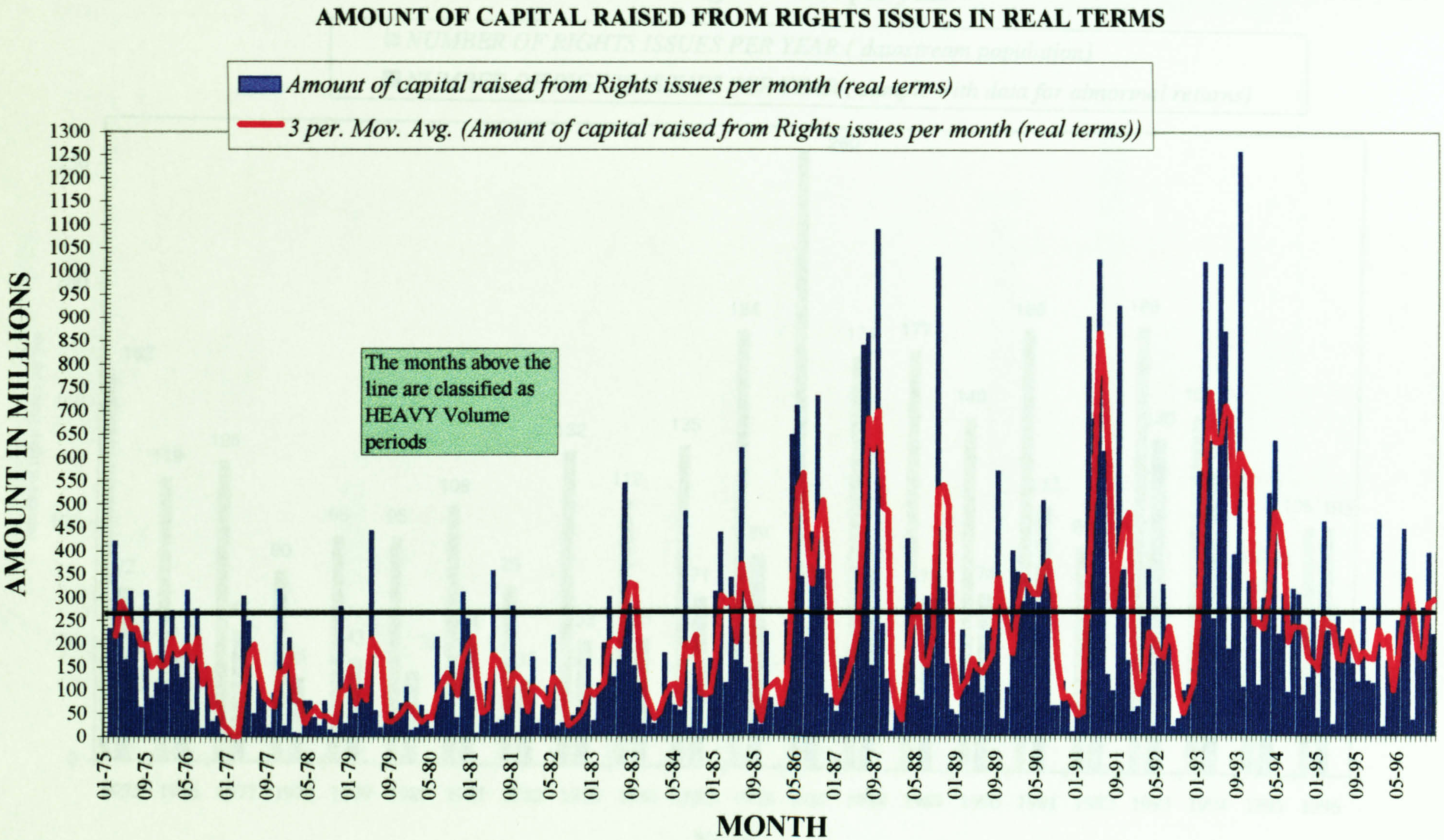
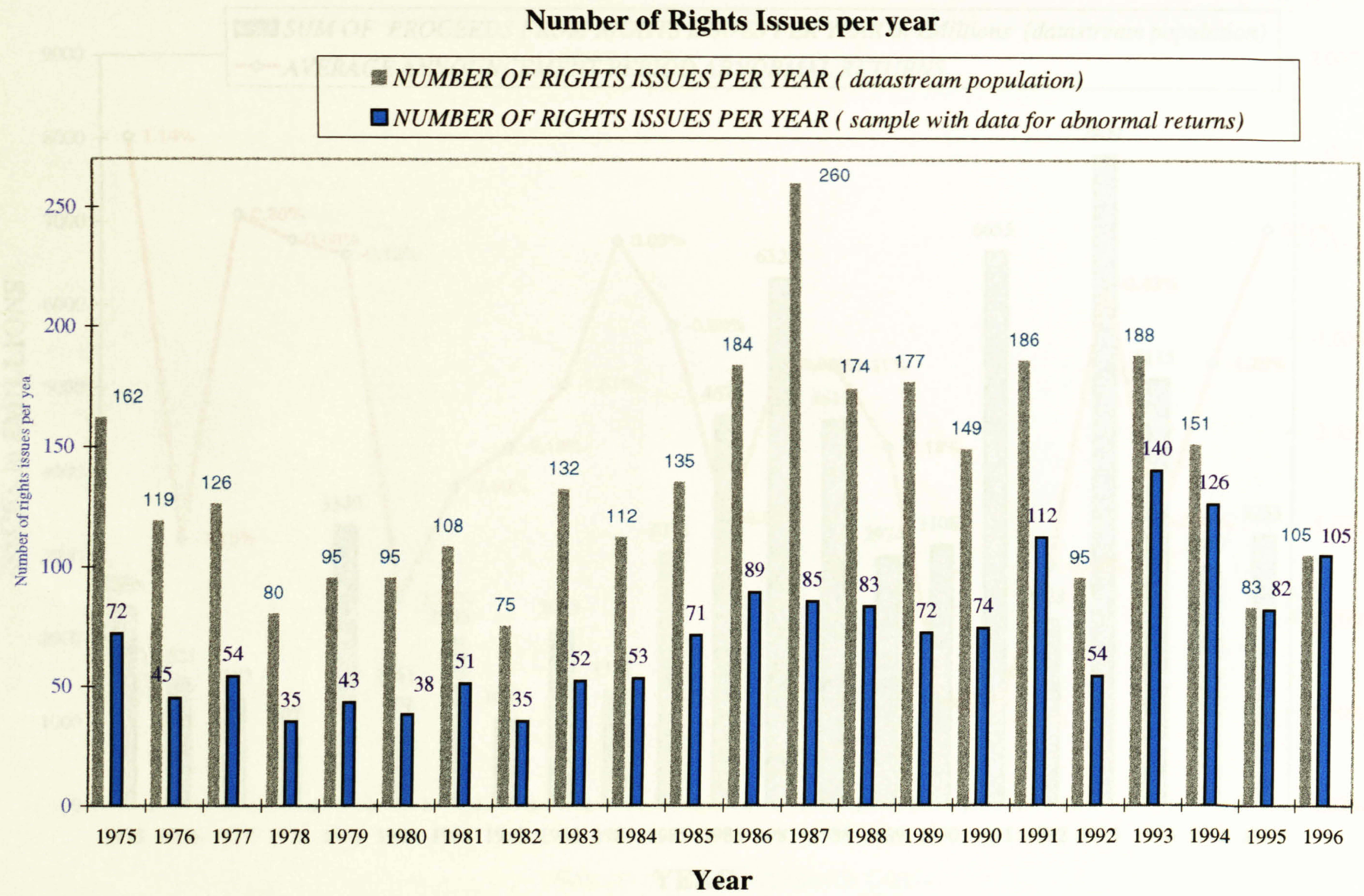

AMOUNT OF CAPITAL RAISED FROM RIGHTS ISSUES IN REAL TERMS
Amount of capital raised from Rights issues per month (real terms)
3 per. Mov. Avg. (Amount of capital raised from Rights issues per month (real terms))
The months above the line are classified as HEAVY Volume periods
AMOUNT IN MILLIONS
1300
1250
1200
1150
1100
1050
1000
950
900
850
800
750
700
650
600
550
500
450
400
350
300
250
200
150
100
50
0
01-75
09-75
05-76
01-77
09-77
05-78
01-79
09-79
05-80
01-81
09-81
05-82
01-83
09-83
05-84
01-85
09-85
05-86
01-87
09-87
05-88
01-89
09-89
05-90
01-91
09-91
05-92
01-93
09-93
05-94
01-95
09-95
05-96
MONTH

figure 6.3



Number of Rights Issues per year
NUMBER OF RIGHTS ISSUES PER YEAR (datastream population)
NUMBER OF RIGHTS ISSUES PER YEAR (sample with data for abnormal returns)
Number of rights issues per yea
0
50
100
150
200
250
162
72
119
45
126
54
80
35
95
43
95
38
108
51
75
35
132
52
112
53
135
71
184
89
260
85
174
83
177
72
149
74
186
112
95
54
188
140
151
126
83
82
105
105
1975
1976
1977
1978
1979
1980
1981
1982
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
Year

figure 6.4

Rights Issue volume and Abnormal Announcement period returns

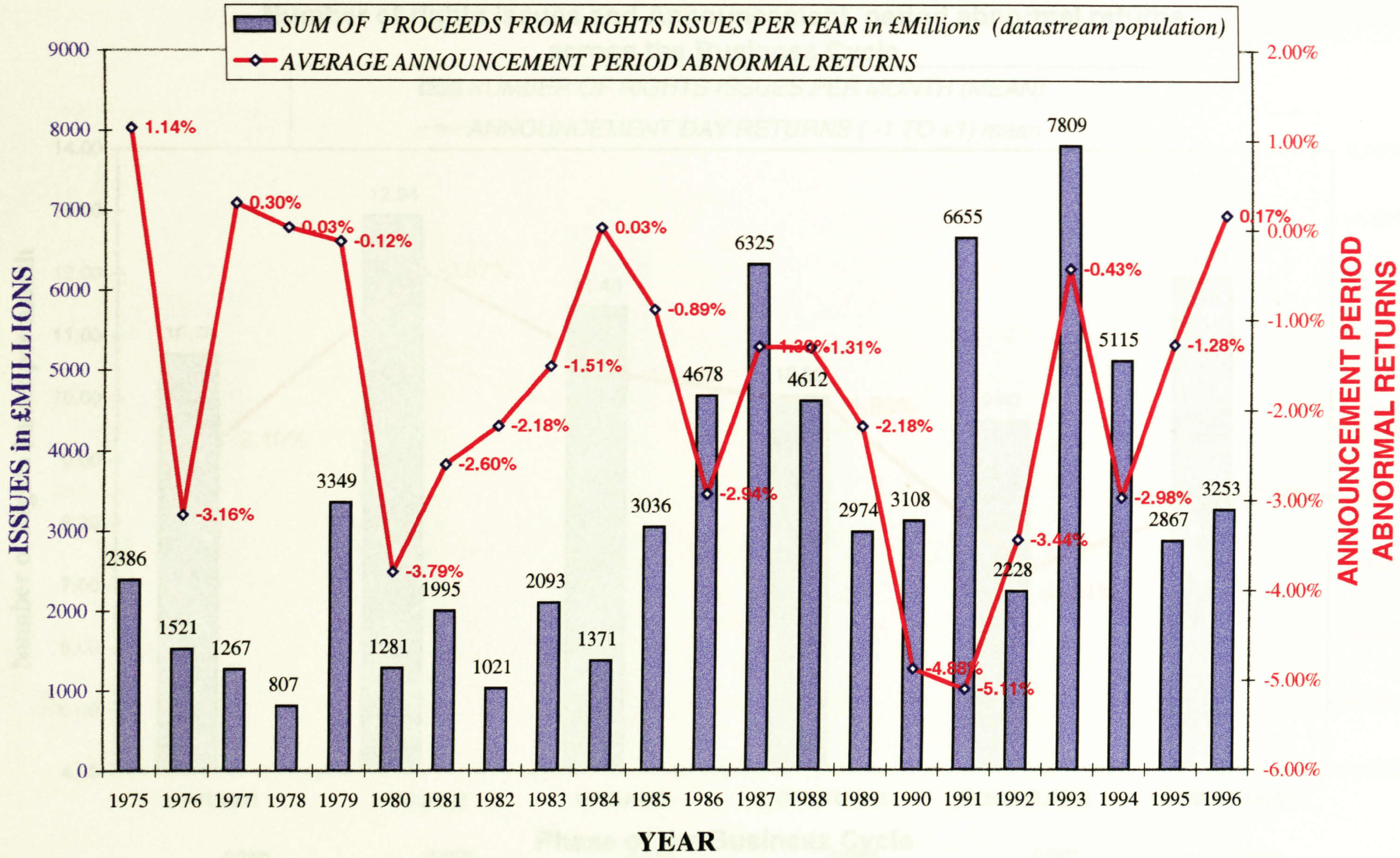
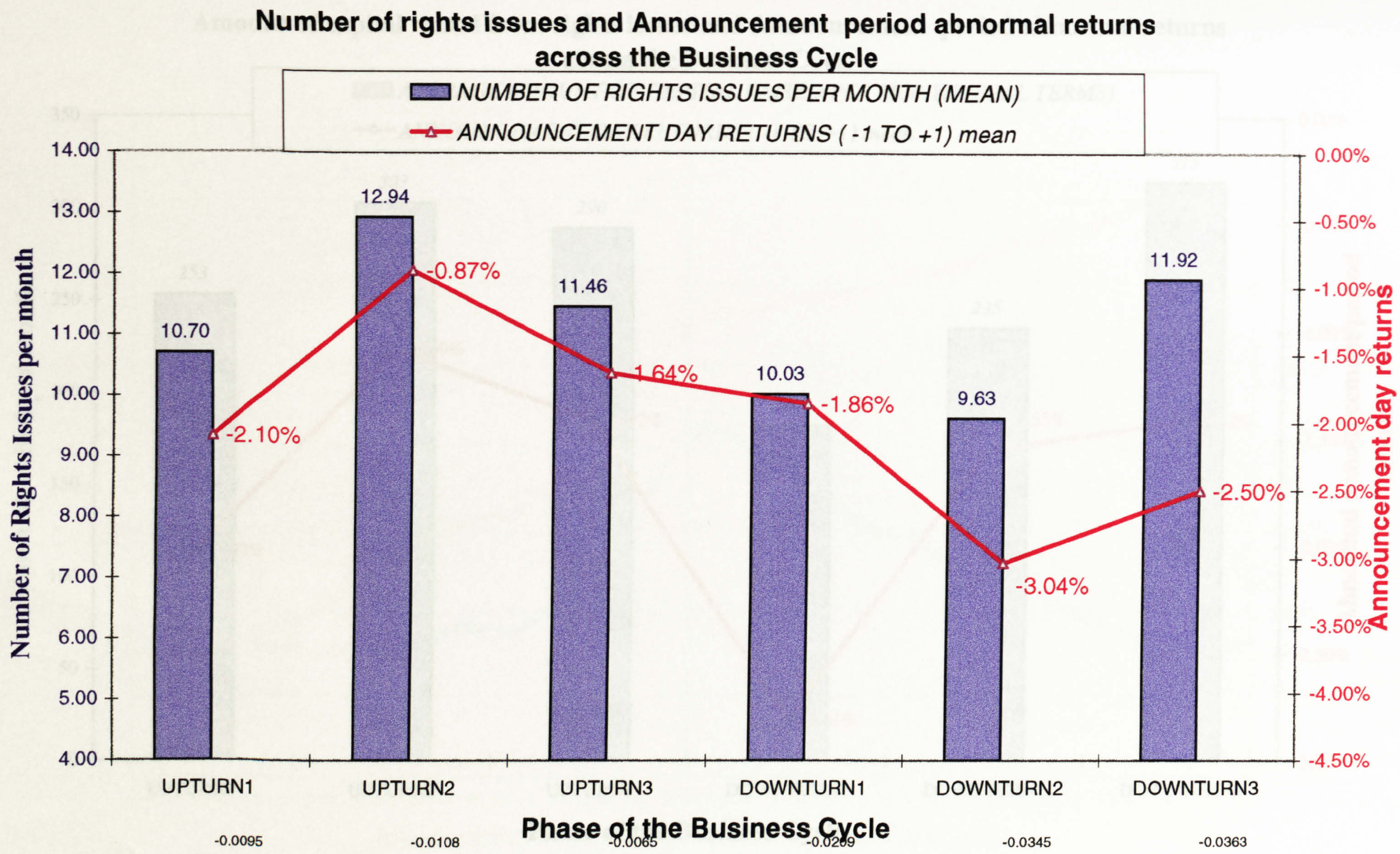
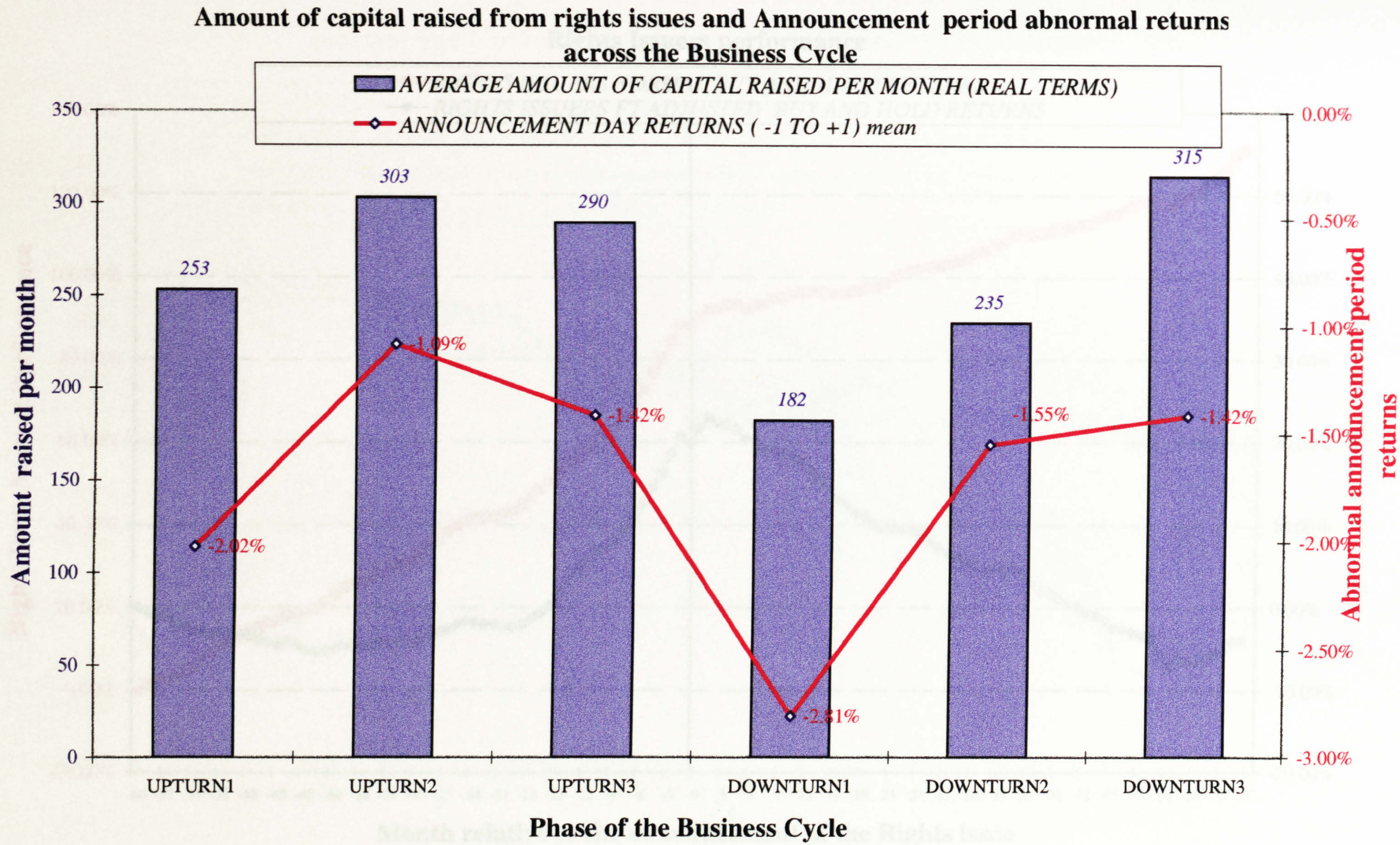


figure 6.5



Number of rights issues and Announcement period abnormal returns across the Business Cycle
NUMBER OF RIGHTS ISSUES PER MONTH (MEAN)
ANNOUNCEMENT DAY RETURNS (-1 TO +1) mean
Number of Rights Issues per month
14.00
13.00
12.00
11.00
10.00
9.00
8.00
7.00
6.00
5.00
4.00
Announcement day returns
0.00%
-0.50%
-1.00%
-1.50%
-2.00%
-2.50%
-3.00%
-3.50%
-4.00%
-4.50%
10.70
12.94
11.46
10.03
9.63
11.92
-2.10%
-0.87%
-1.64%
-1.86%
-3.04%
-2.50%
UPTURN1
UPTURN2
UPTURN3
DOWNTURN1
DOWNTURN2
DOWNTURN3
Phase of the Business Cycle
-0.0095
-0.0108
-0.0065
-0.0269
-0.0345
-0.0363

figure 6.6



Amount of capital raised from rights issues and Announcement period abnormal returns across the Business Cycle
AVERAGE AMOUNT OF CAPITAL RAISED PER MONTH (REAL TERMS)
ANNOUNCEMENT DAY RETURNS (-1 TO +1) mean
Amount raised per month
350
300
250
200
150
100
50
0
Abnormal announcement period returns
0.00%
-0.50%
-1.00%
-1.50%
-2.00%
-2.50%
-3.00%
253
303
290
182
235
315
-2.02%
-1.09%
-1.42%
-2.81%
-1.55%
-1.42%
UPTURN1
UPTURN2
UPTURN3
DOWNTURN1
DOWNTURN2
DOWNTURN3
Phase of the Business Cycle

Figure 6.7

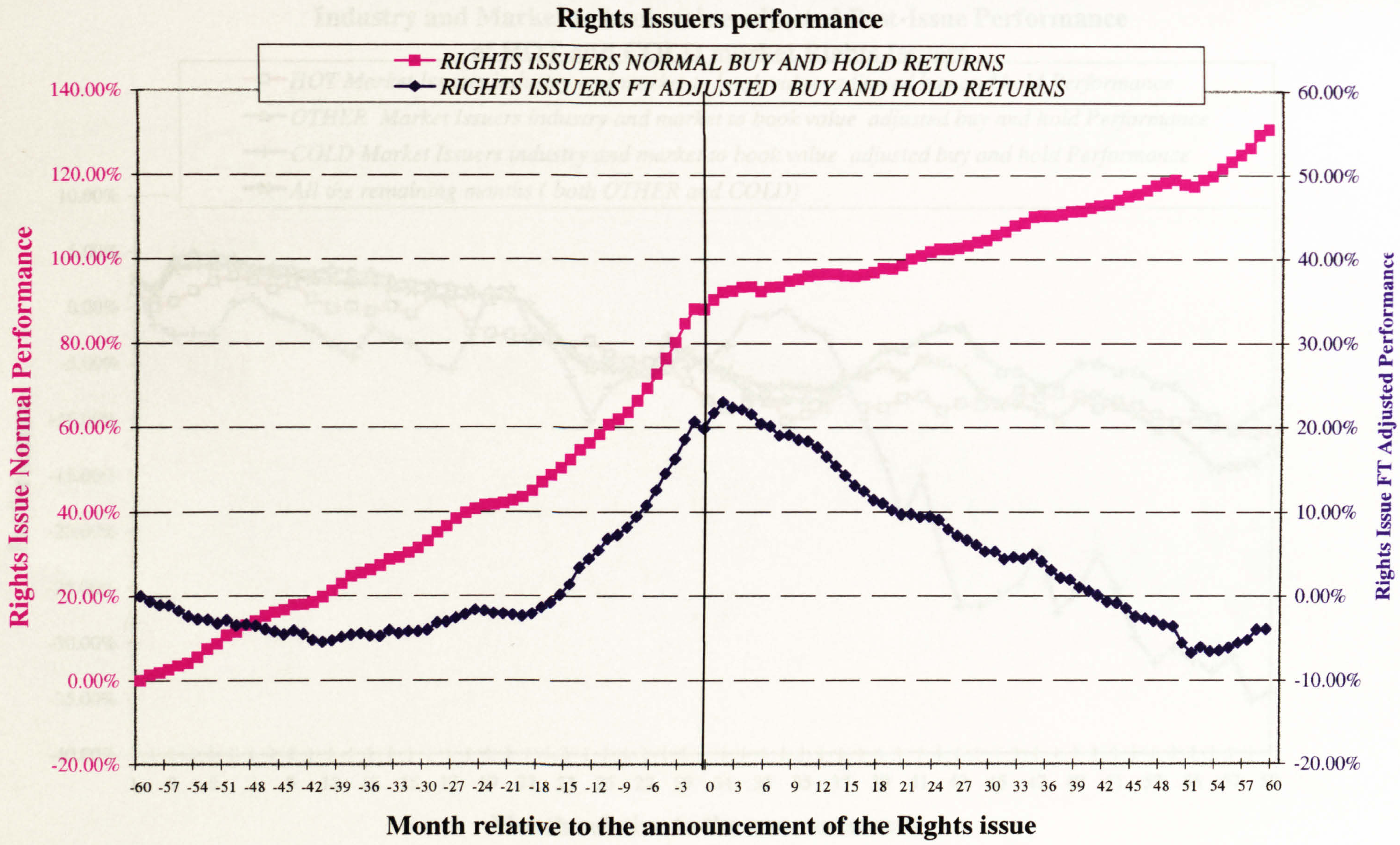

Rights Issuers performance
RIGHTS ISSUERS NORMAL BUY AND HOLD RETURNS
RIGHTS ISSUERS FT ADJUSTED BUY AND HOLD RETURNS
Rights Issue Normal Performance
140.00%
120.00%
100.00%
80.00%
60.00%
40.00%
20.00%
0.00%
-20.00%
Rights Issue FT Adjusted Performance
60.00%
50.00%
40.00%
30.00%
20.00%
10.00%
0.00%
-10.00%
-20.00%
-60 -57 -54 -51 -48 -45 -42 -39 -36 -33 -30 -27 -24 -21 -18 -15 -12 -9 -6 -3 0 3 6 9 12 15 18 21 24 27 30 33 36 39 42 45 48 51 54 57 60
Month relative to the announcement of the Rights issue

Figure 6.8

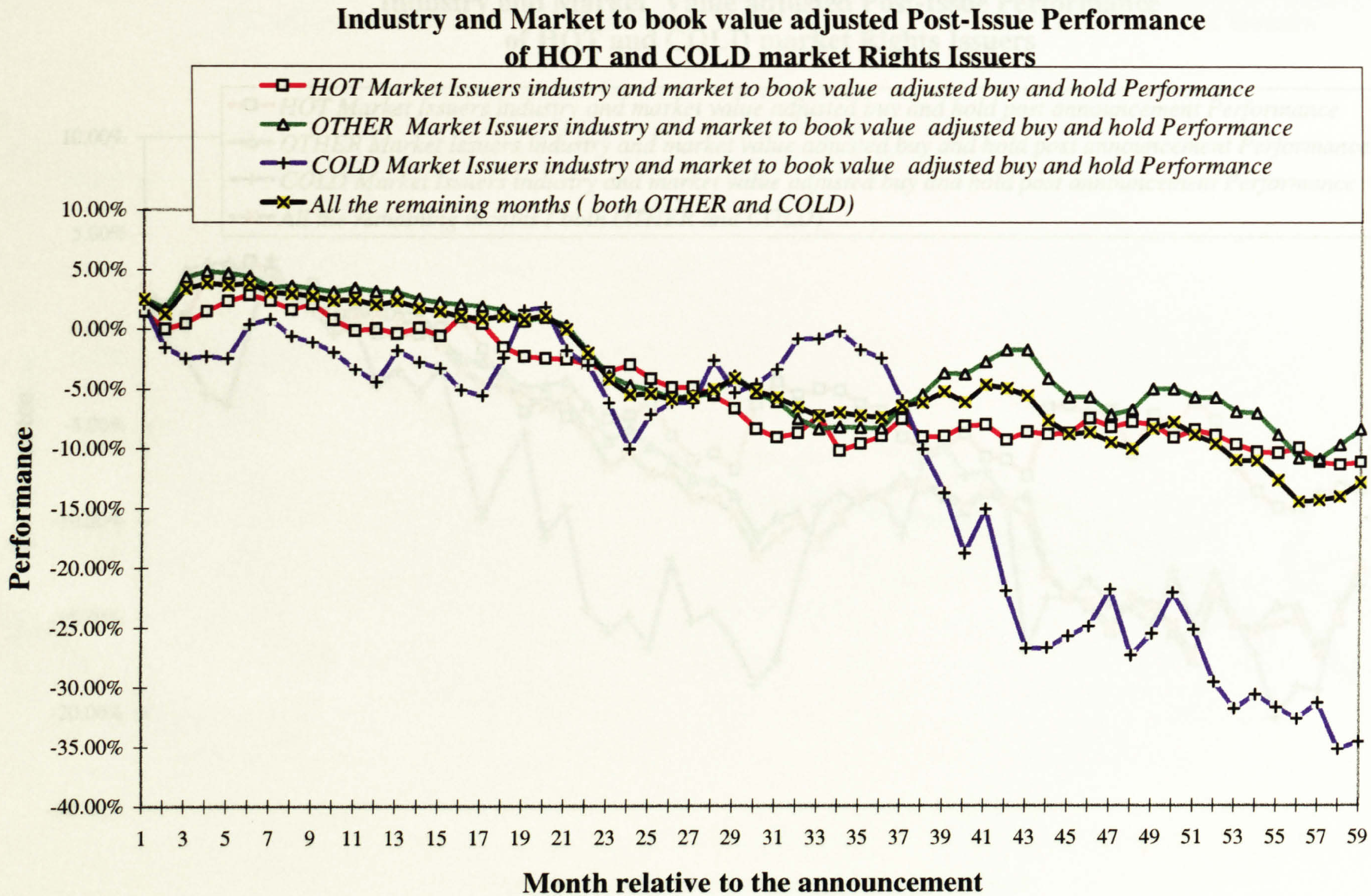

Industry and Market to book value adjusted Post-Issue Performance
of HOT and COLD market Rights Issuers
HOT Market Issuers industry and market to book value adjusted buy and hold Performance
OTHER Market Issuers industry and market to book value adjusted buy and hold Performance
COLD Market Issuers industry and market to book value adjusted buy and hold Performance
All the remaining months (both OTHER and COLD)
Performance
10.00%
5.00%
0.00%
-5.00%
-10.00%
-15.00%
-20.00%
-25.00%
-30.00%
-35.00%
-40.00%
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41 43 45 47 49 51 53 55 57 59
Month relative to the announcement

Figure 6.9

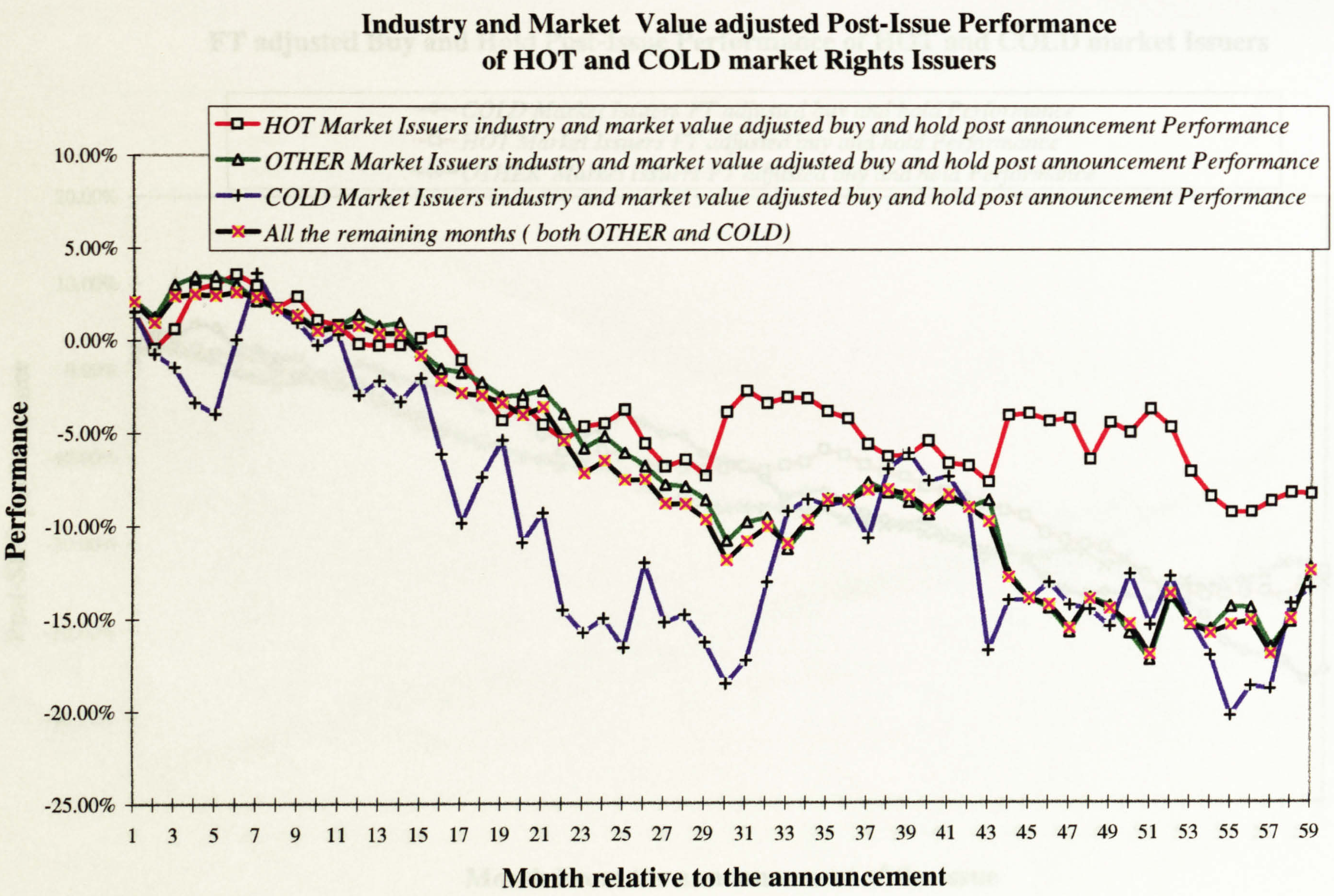

Industry and Market Value adjusted Post-Issue Performance
of HOT and COLD market Rights Issuers
HOT Market Issuers industry and market value adjusted buy and hold post announcement Performance
OTHER Market Issuers industry and market value adjusted buy and hold post announcement Performance
COLD Market Issuers industry and market value adjusted buy and hold post announcement Performance
All the remaining months (both OTHER and COLD)
10.00%
5.00%
0.00%
-5.00%
-10.00%
-15.00%
-20.00%
-25.00%
Performance
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41 43 45 47 49 51 53 55 57 59
Month relative to the announcement

Figure 6.10

FT adjusted Buy and Hold Post-Issue Performance of HOT and COLD market Issuers

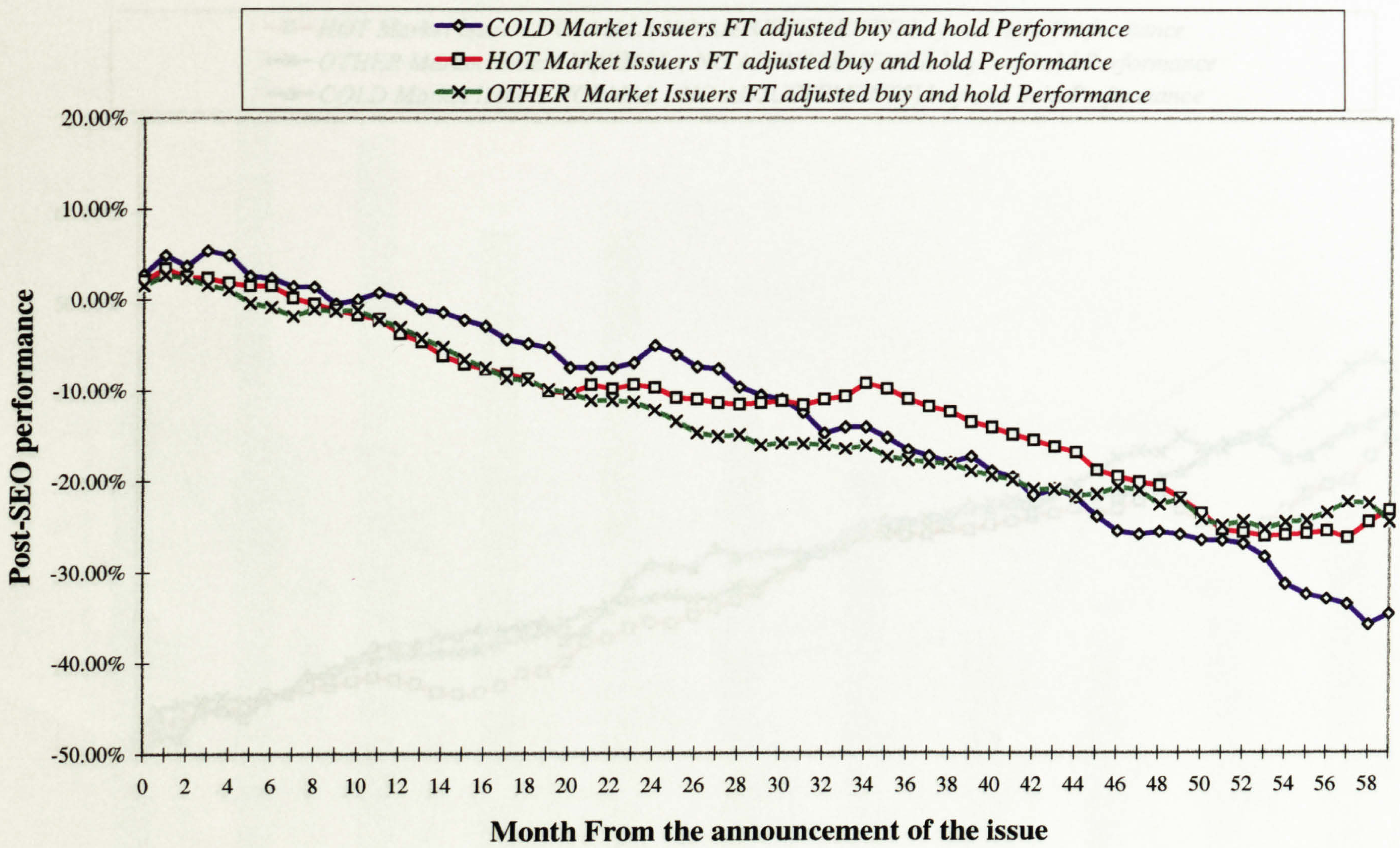


Figure 6.11

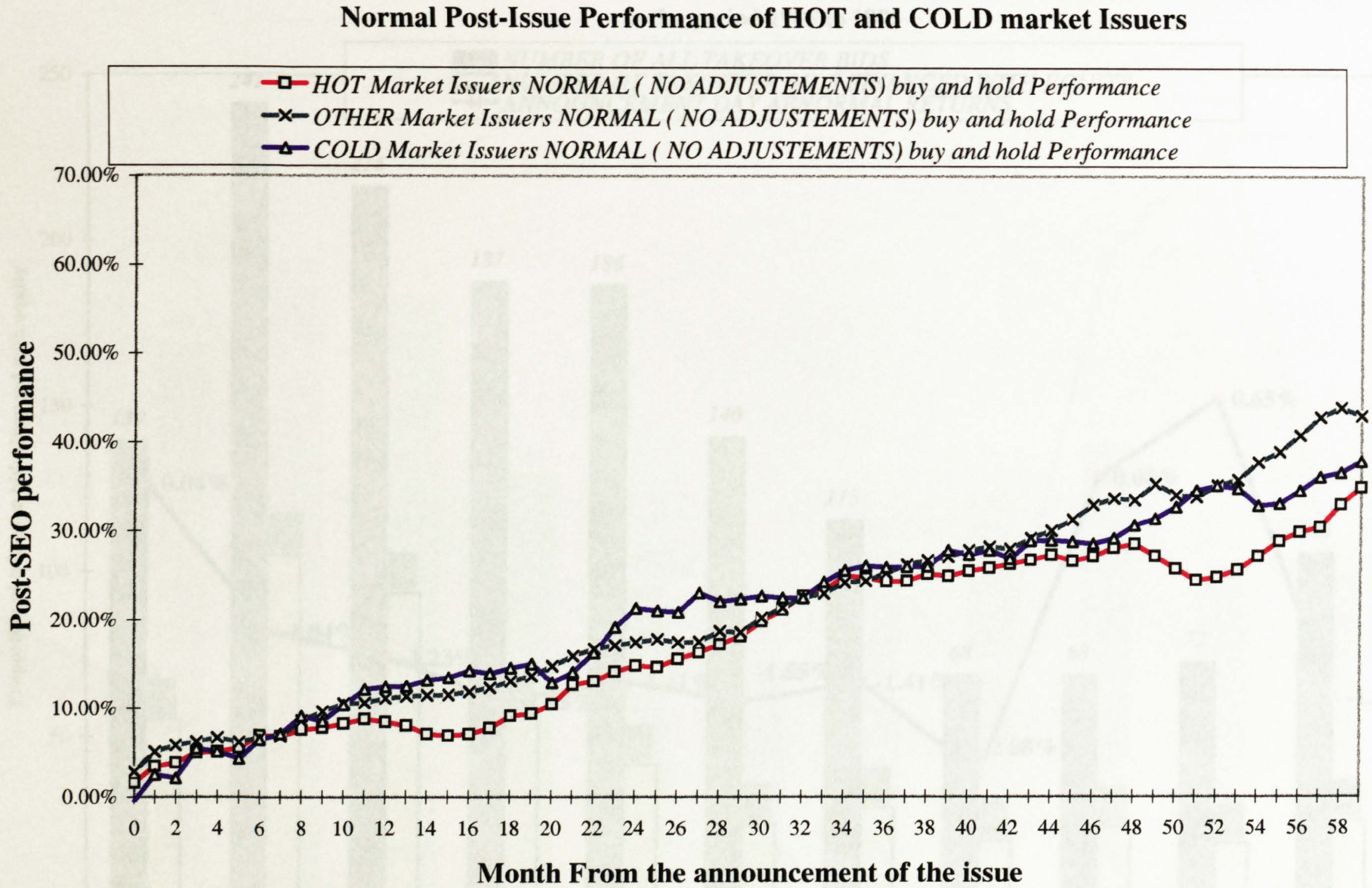

Normal Post-Issue Performance of HOT and COLD market Issuers
HOT Market Issuers NORMAL (NO ADJUSTEMENTS) buy and hold Performance
OTHER Market Issuers NORMAL (NO ADJUSTEMENTS) buy and hold Performance
COLD Market Issuers NORMAL (NO ADJUSTEMENTS) buy and hold Performance
Post-SEO performance
70.00%
60.00%
50.00%
40.00%
30.00%
20.00%
10.00%
0.00%
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58
Month From the announcement of the issue

Figure 7.1

Number of all Takeover Bids and those Financed with Equity and announcement day abnormal returns in the period 1985 to 1995

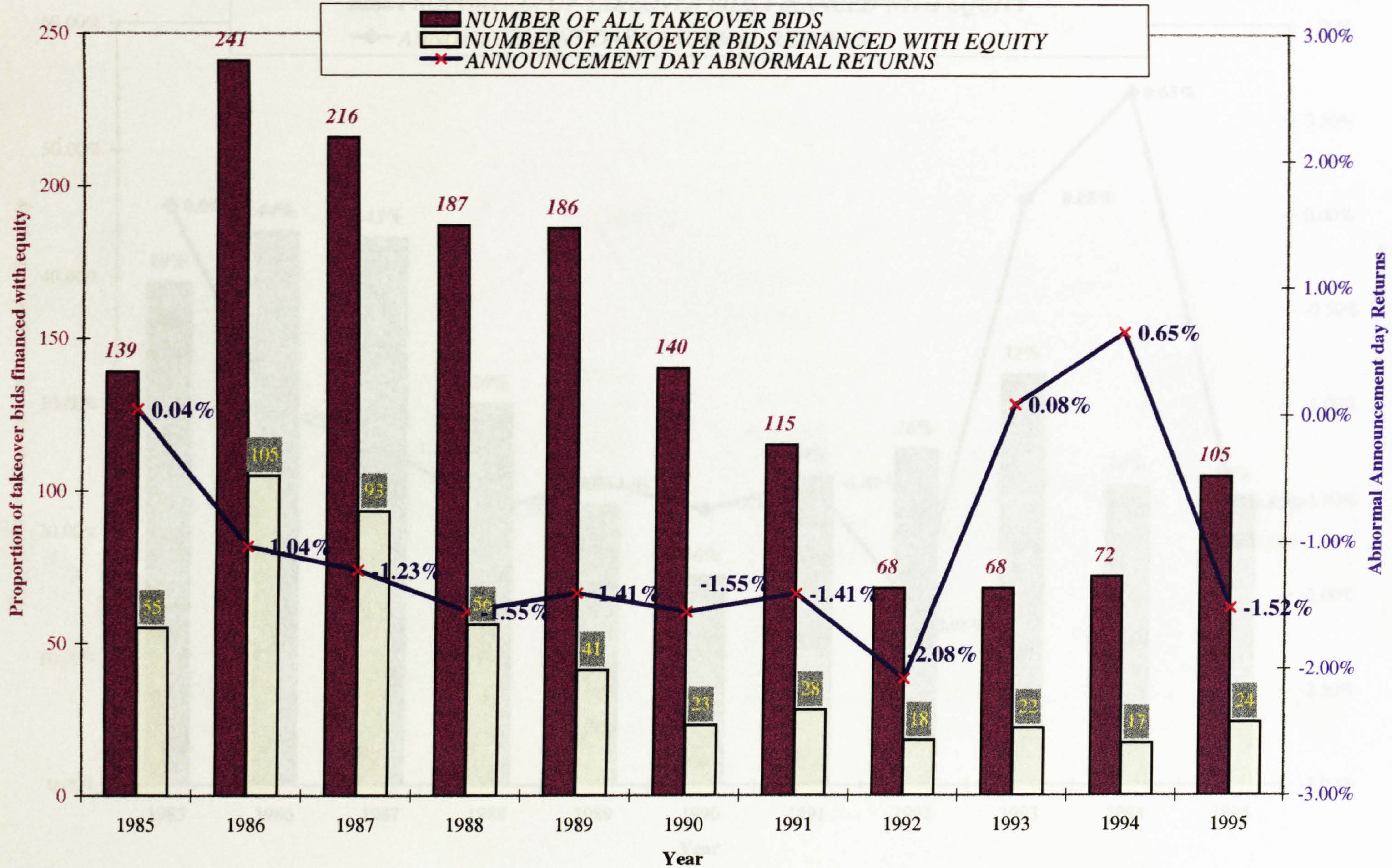


Figure 7.2

Proportion of Takeover Bids Financed with Equity and announcement day abnormal returns

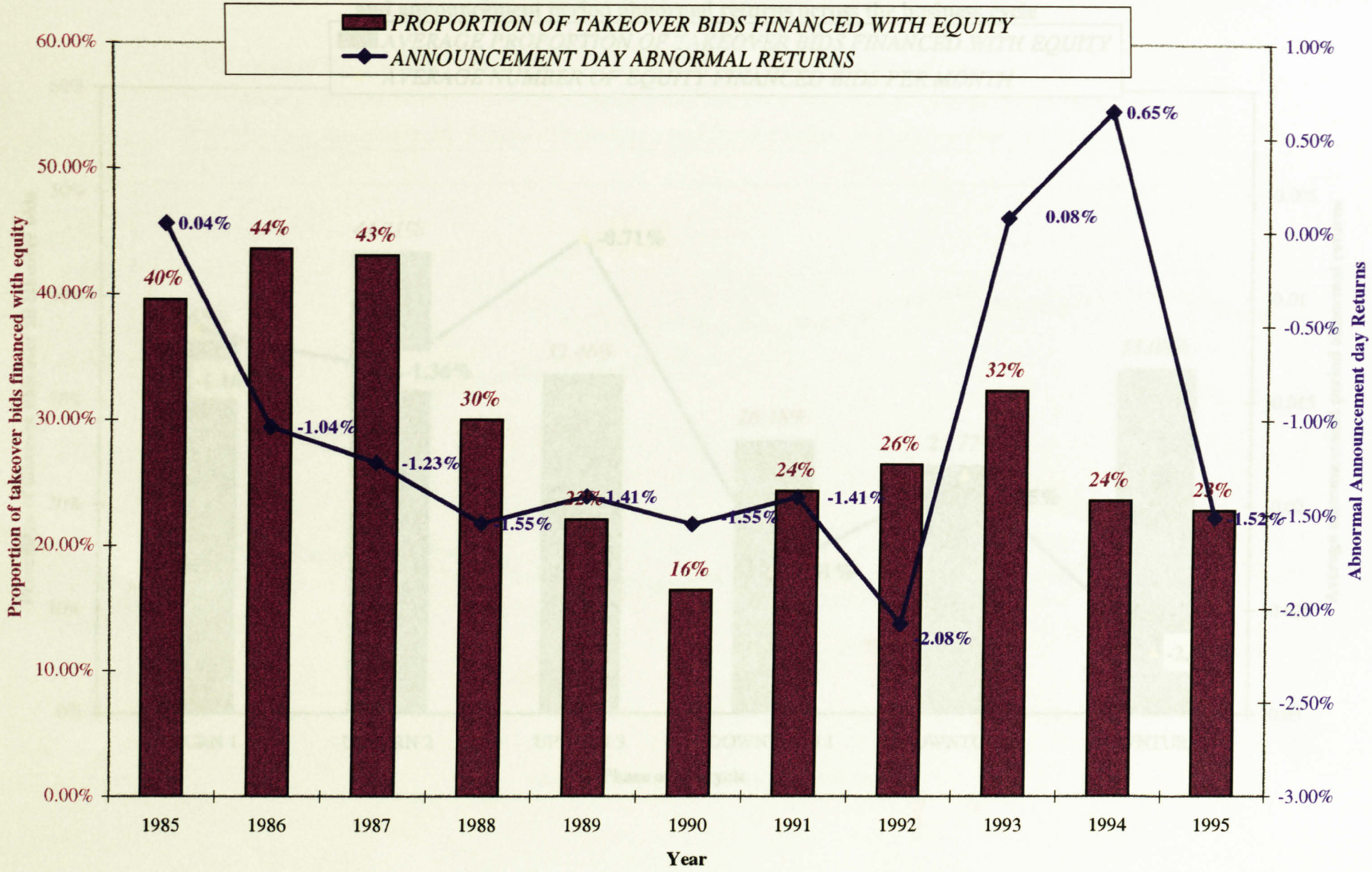
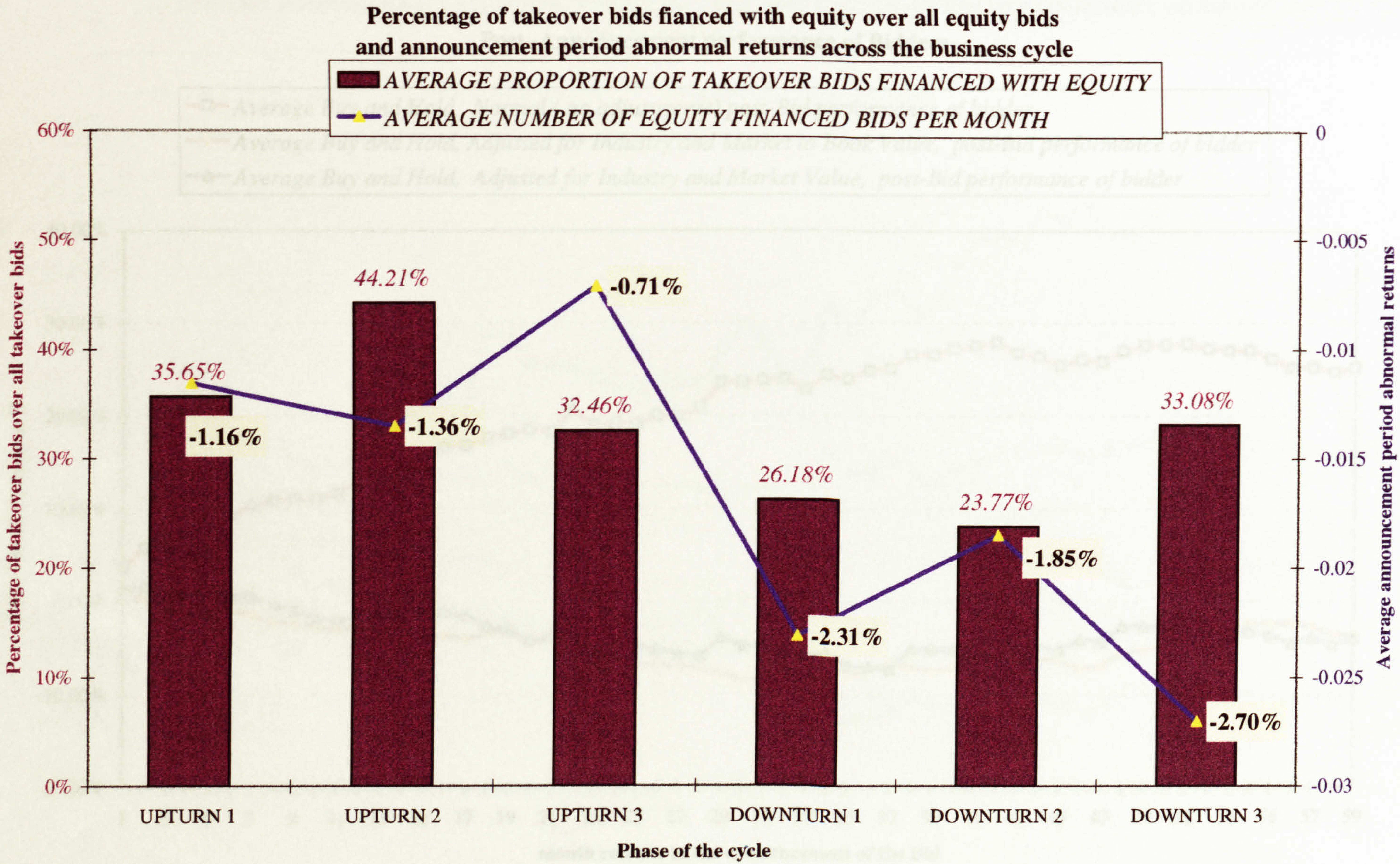
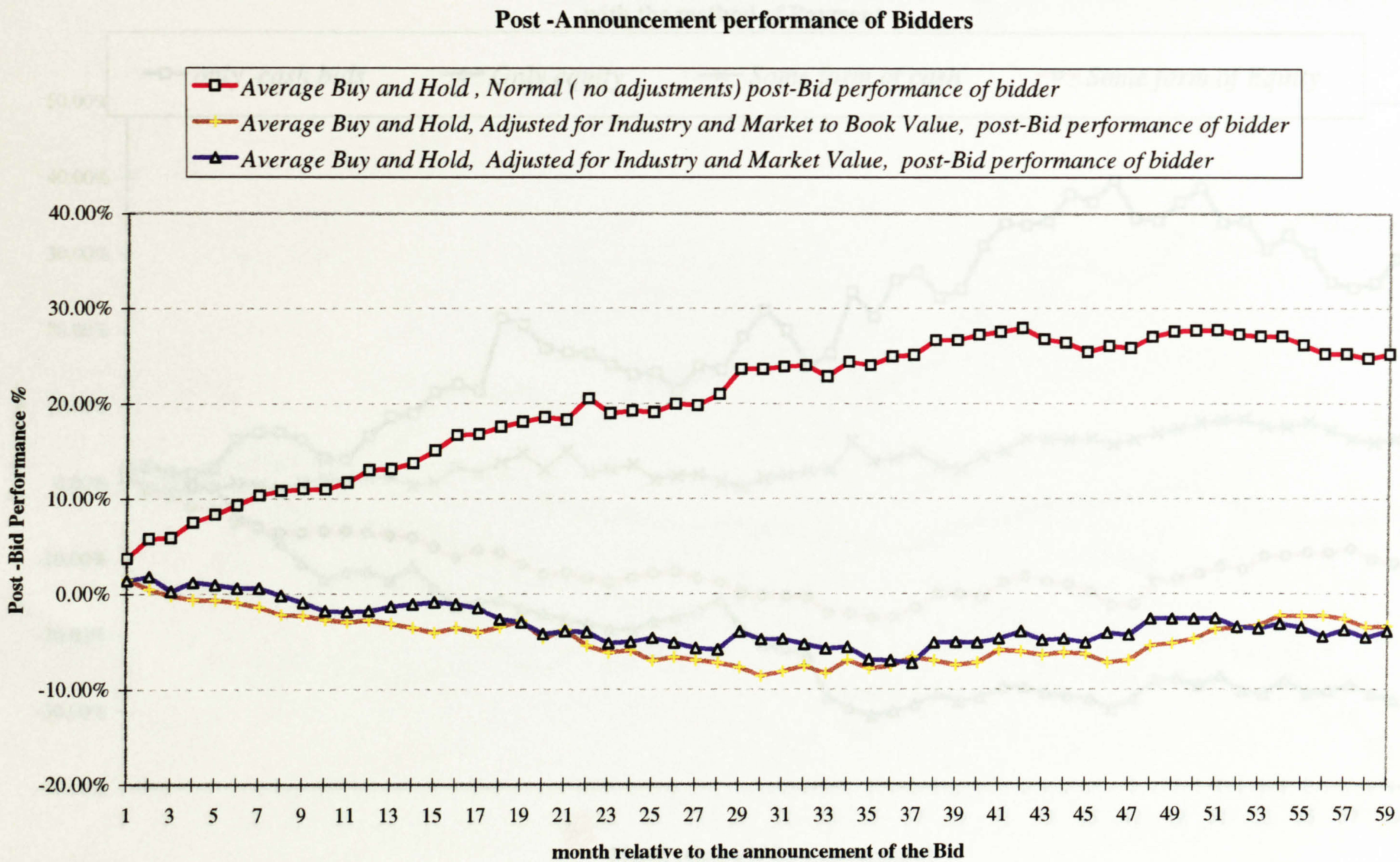


figure 7.3



Percentage of takeover bids fianced with equity over all equity bids
and announcement period abnormal returns across the business cycle
AVERAGE PROPORTION OF TAKEOVER BIDS FINANCED WITH EQUITY
AVERAGE NUMBER OF EQUITY FINANCED BIDS PER MONTH
Percentage of takeover bids over all takeover bids
Average announcement period abnormal returns
60%
50%
40%
30%
20%
10%
0%
0
-0.005
-0.01
-0.015
-0.02
-0.025
-0.03
35.65%
44.21%
32.46%
26.18%
23.77%
33.08%
-1.16%
-1.36%
-0.71%
-2.31%
-1.85%
-2.70%
UPTURN 1
UPTURN 2
UPTURN 3
DOWNTURN 1
DOWNTURN 2
DOWNTURN 3
Phase of the cycle

figure 7.4



Post -Announcement performance of Bidders
Average Buy and Hold , Normal (no adjustments) post-Bid performance of bidder
Average Buy and Hold, Adjusted for Industry and Market to Book Value, post-Bid performance of bidder
Average Buy and Hold, Adjusted for Industry and Market Value, post-Bid performance of bidder
40.00%
30.00%
20.00%
10.00%
0.00%
-10.00%
-20.00%
Post -Bid Performance %
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41 43 45 47 49 51 53 55 57 59
month relative to the announcement of the Bid

figure 7.5

INDUSTRY AND MARKET TO BOOK VALUE Buy and Hold Post-Bid performance of Bidders partitioned with the method of Payment

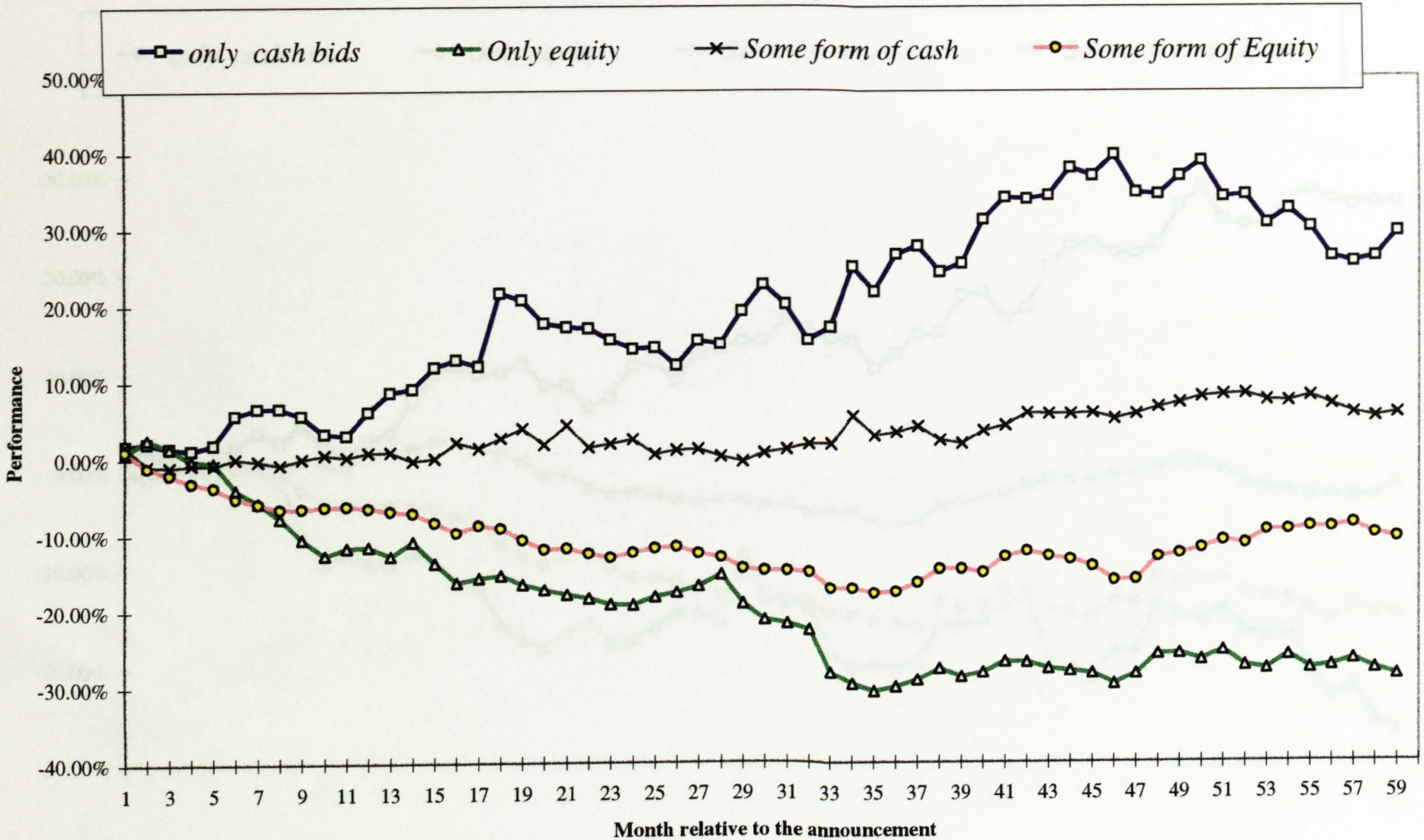


figure 7.6

INDUSTRY AND MARKET VALUE Buy and Hold Post-Bid performance of Bidders partitioned with the method of Payment

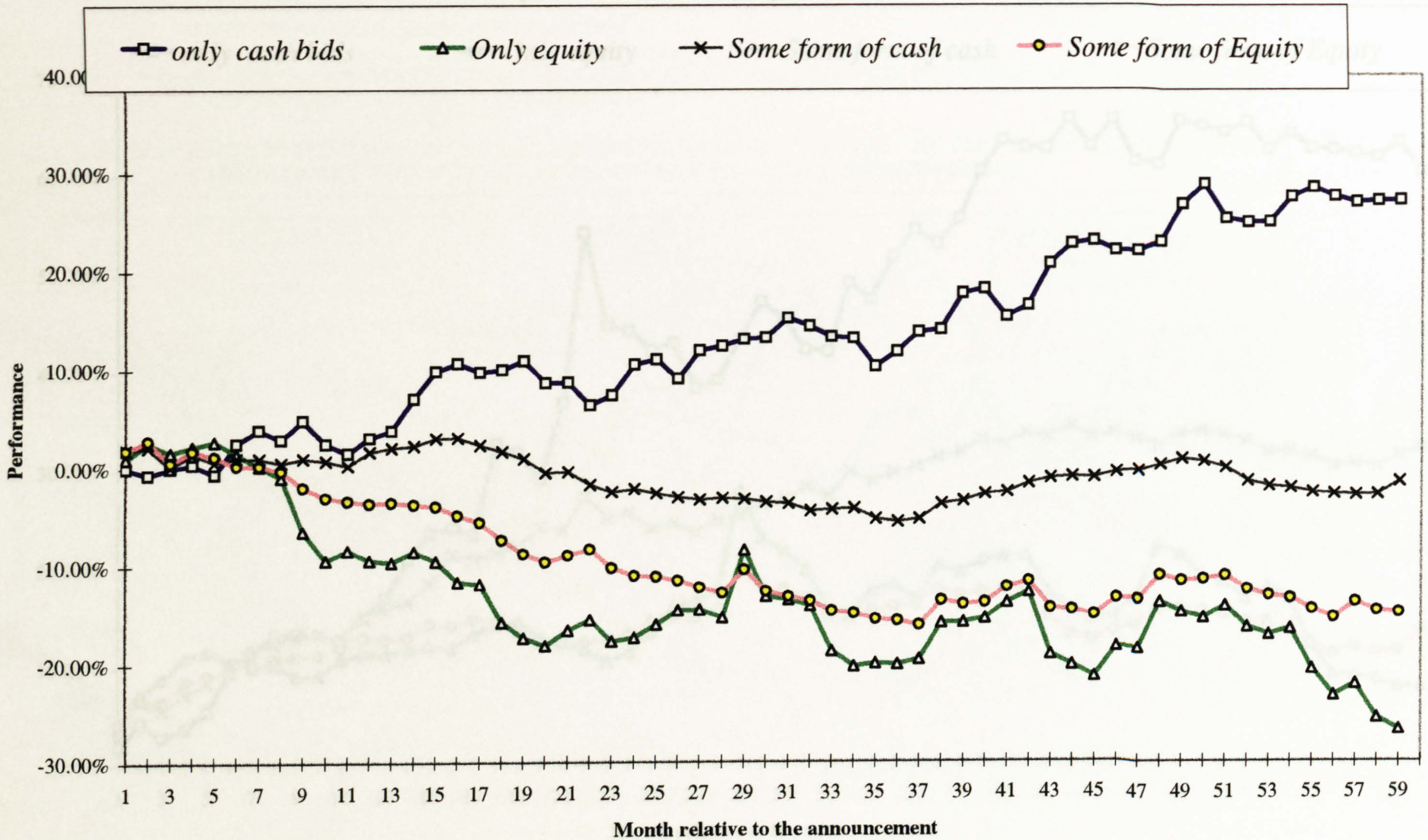
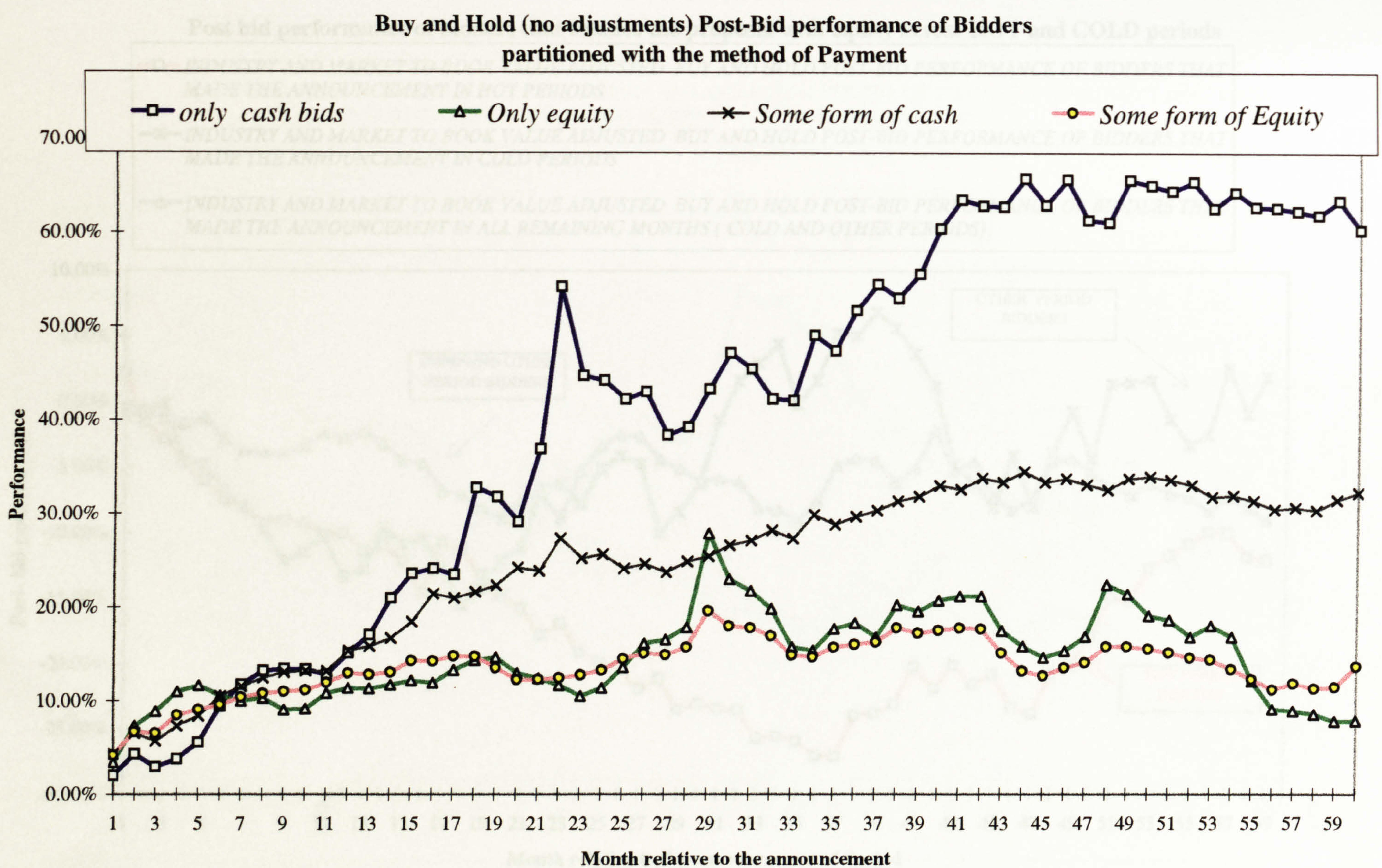


figure 7.7



Buy and Hold (no adjustments) Post-Bid performance of Bidders partitioned with the method of Payment
only cash bids
Only equity
Some form of cash
Some form of Equity
70.00
60.00%
50.00%
40.00%
30.00%
20.00%
10.00%
0.00%
Performance
1
3
5
7
9
11
13
15
17
19
21
23
25
27
29
31
33
35
37
39
41
43
45
47
49
51
53
55
57
59
Month relative to the announcement

figure 7.8

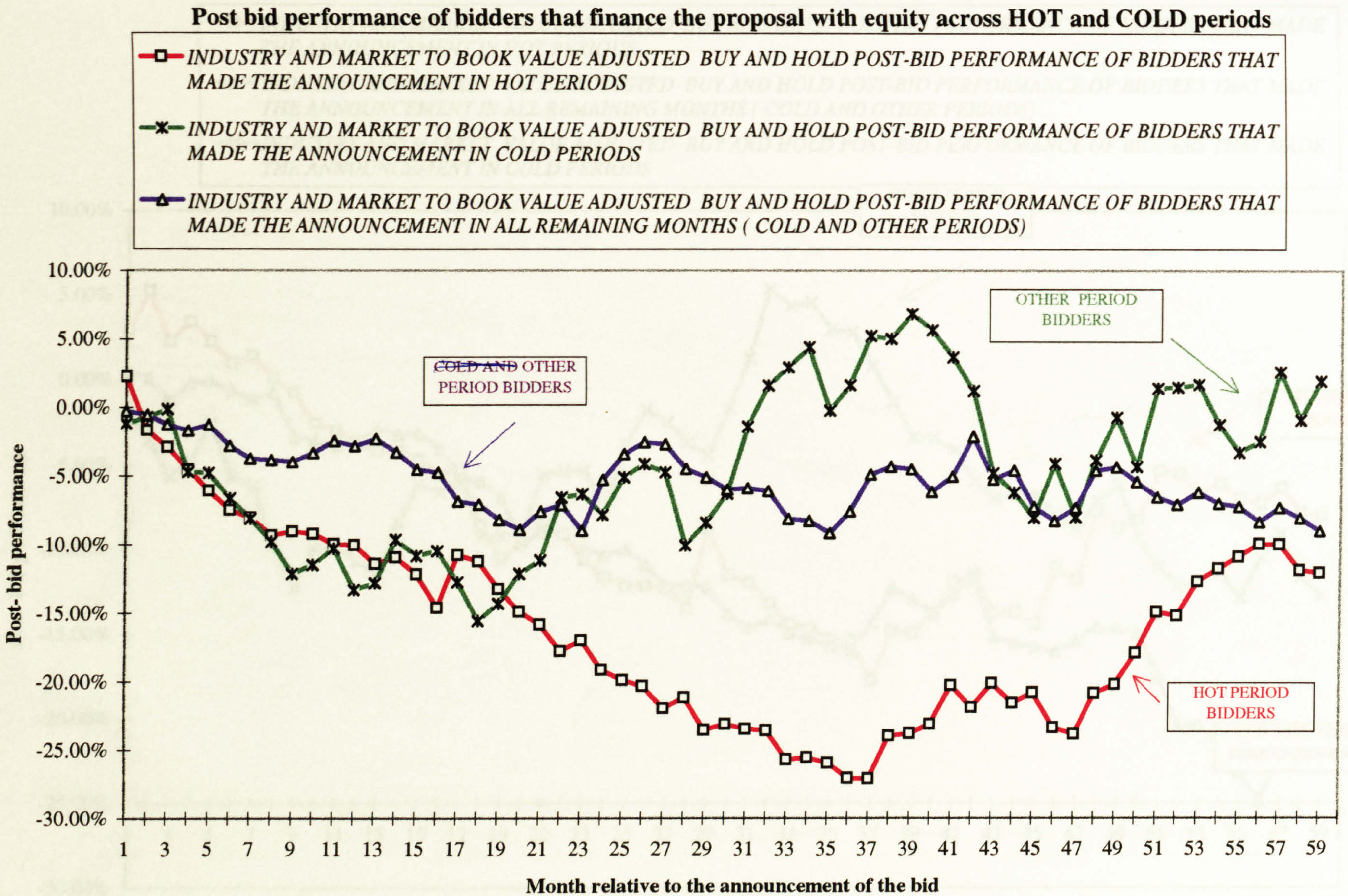

Post bid performance of bidders that finance the proposal with equity across HOT and COLD periods
INDUSTRY AND MARKET TO BOOK VALUE ADJUSTED BUY AND HOLD POST-BID PERFORMANCE OF BIDDERS THAT MADE THE ANNOUNCEMENT IN HOT PERIODS
INDUSTRY AND MARKET TO BOOK VALUE ADJUSTED BUY AND HOLD POST-BID PERFORMANCE OF BIDDERS THAT MADE THE ANNOUNCEMENT IN COLD PERIODS
INDUSTRY AND MARKET TO BOOK VALUE ADJUSTED BUY AND HOLD POST-BID PERFORMANCE OF BIDDERS THAT MADE THE ANNOUNCEMENT IN ALL REMAINING MONTHS (COLD AND OTHER PERIODS)
~~COLD AND~~ OTHER PERIOD BIDDERS
OTHER PERIOD BIDDERS
HOT PERIOD BIDDERS
Post- bid performance
10.00%
5.00%
0.00%
-5.00%
-10.00%
-15.00%
-20.00%
-25.00%
-30.00%
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41 43 45 47 49 51 53 55 57 59
Month relative to the announcement of the bid

figure 7.9

Post bid performance of bidders that finance the proposal with equity across HOT and COLD periods

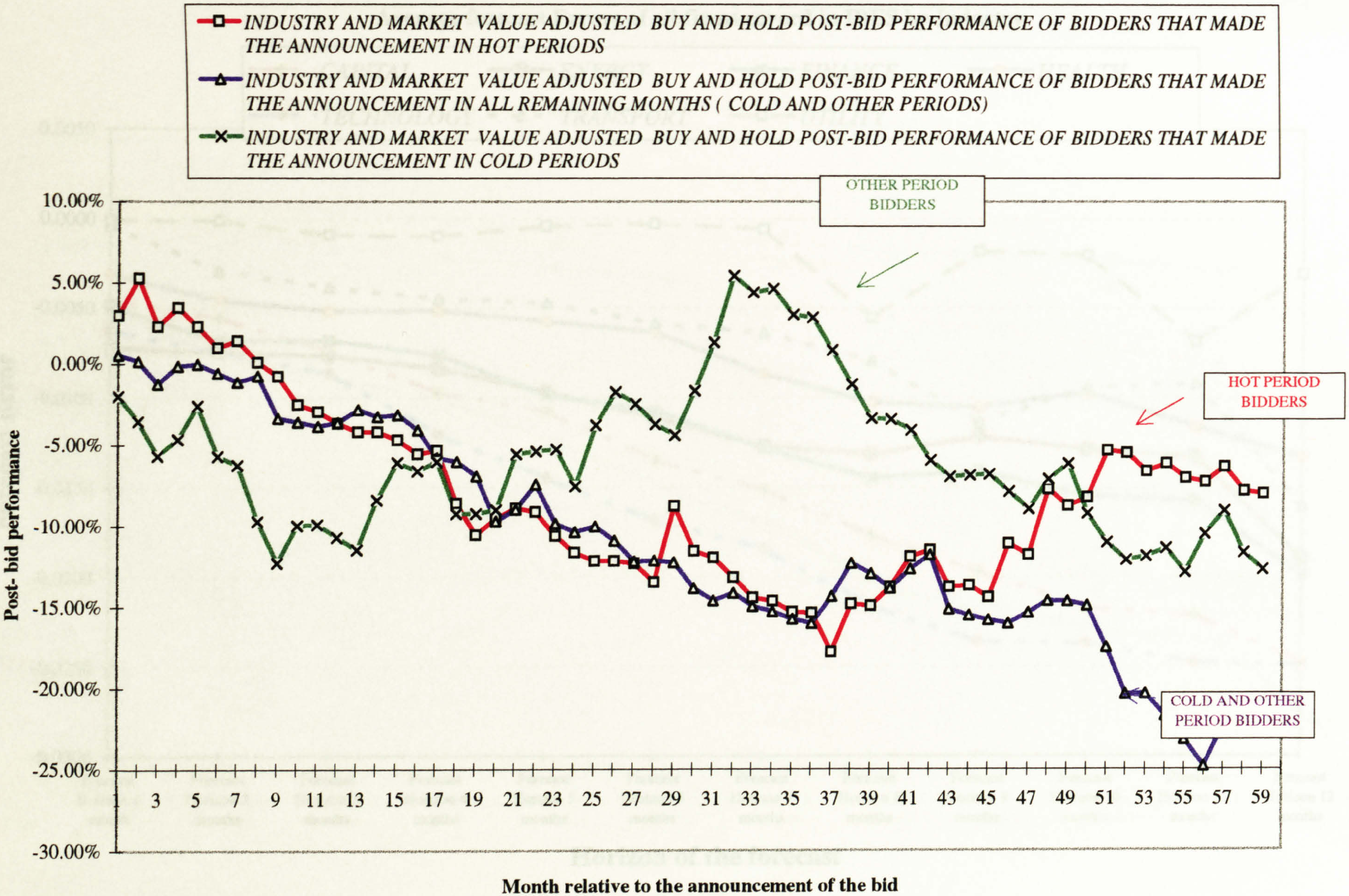


Figure 8.1

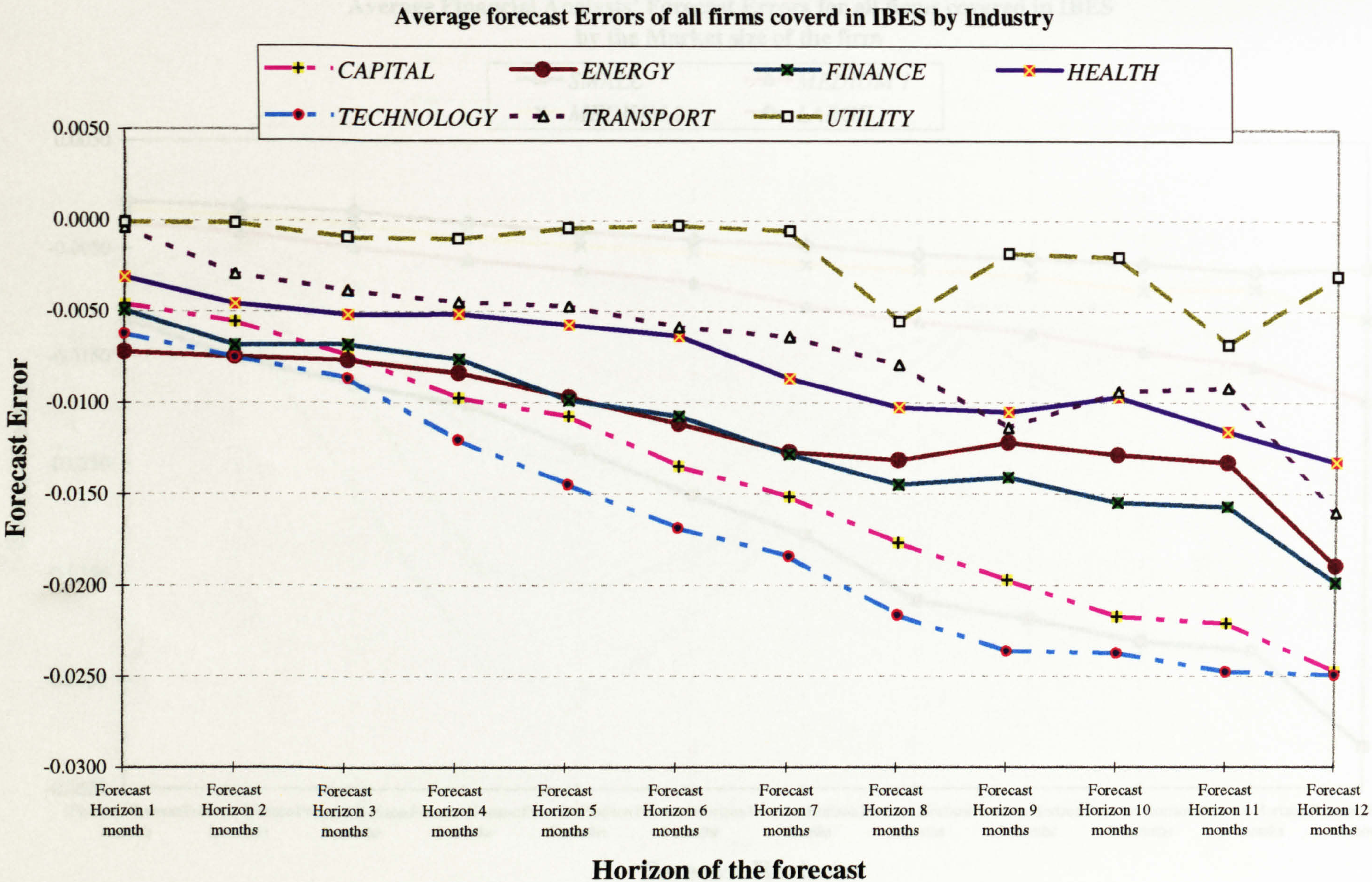

Average forecast Errors of all firms coverd in IBES by Industry
CAPITAL
ENERGY
FINANCE
HEALTH
TECHNOLOGY
TRANSPORT
UTILITY
0.0050
0.0000
-0.0050
-0.0100
-0.0150
-0.0200
-0.0250
-0.0300
Forecast Error
Forecast Horizon 1 month
Forecast Horizon 2 months
Forecast Horizon 3 months
Forecast Horizon 4 months
Forecast Horizon 5 months
Forecast Horizon 6 months
Forecast Horizon 7 months
Forecast Horizon 8 months
Forecast Horizon 9 months
Forecast Horizon 10 months
Forecast Horizon 11 months
Forecast Horizon 12 months
Horizon of the forecast

Figure 8.2

Average Financial Analysts' Forecast Errors for all firms covered in IBES by the Market size of the firm

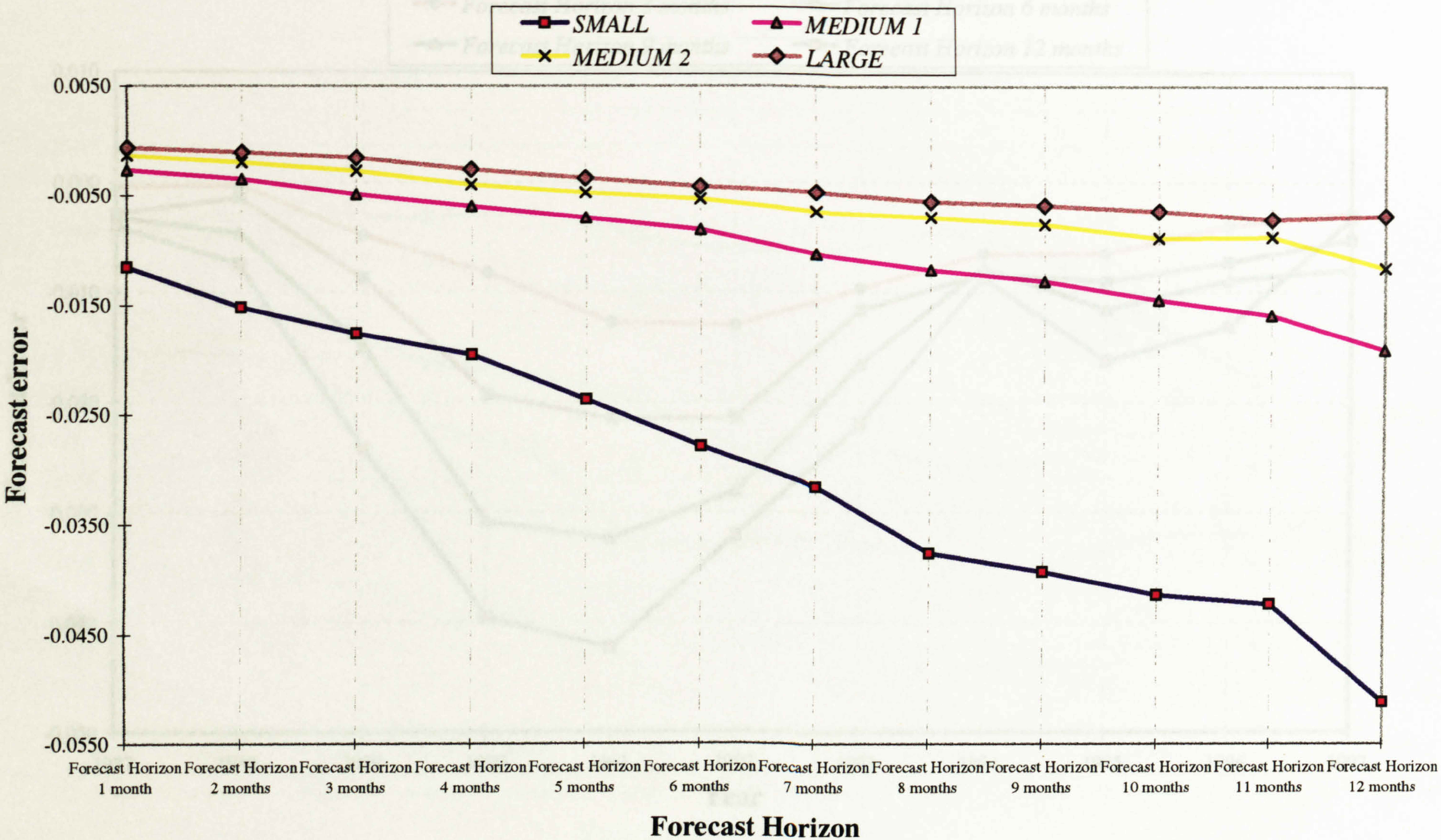


Figure 8.3

Average Forecast Errors made for all firms covered in IBES over time

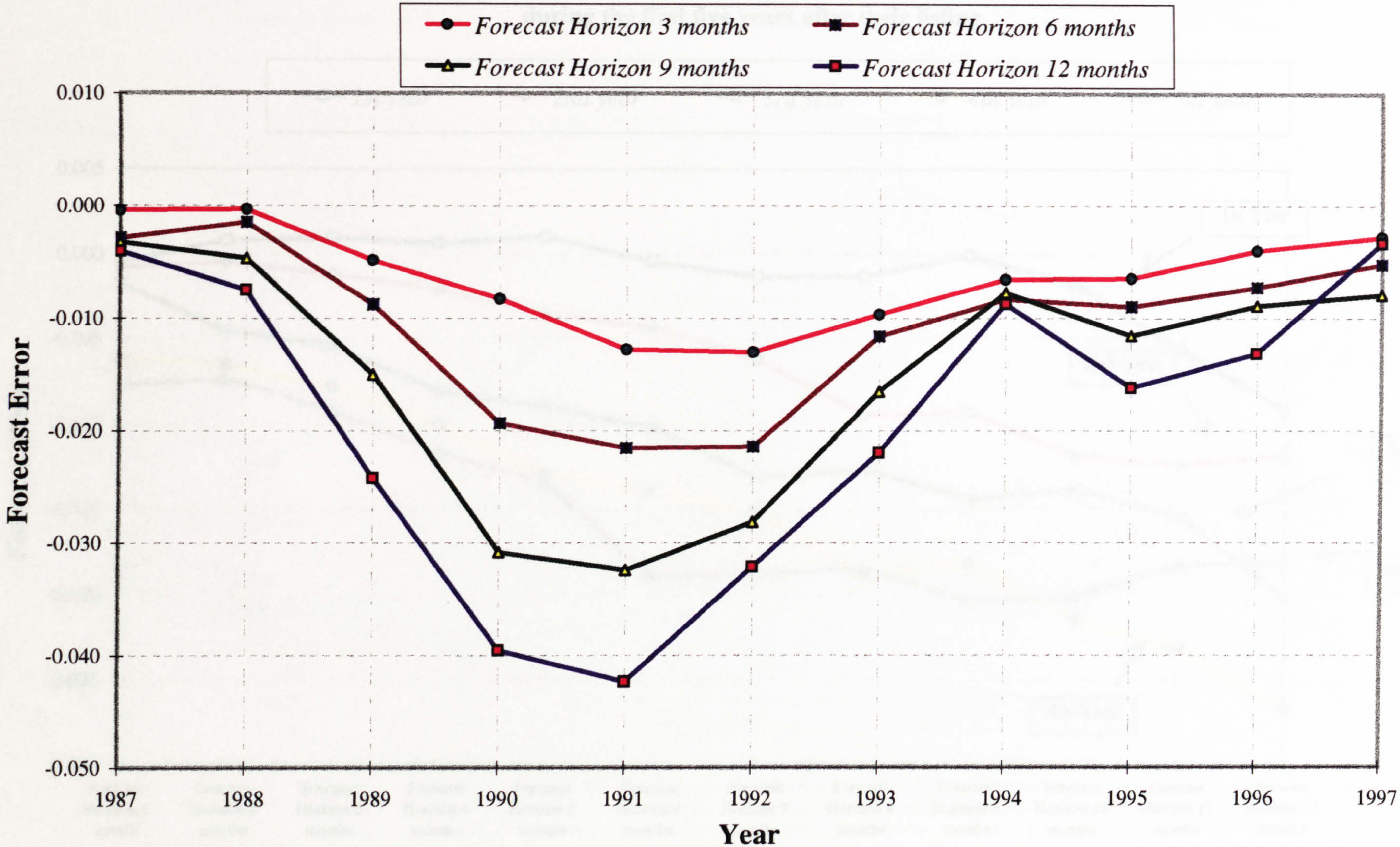


Figure 8.4

Average Financial Analysts' Unadjusted Forecast Error For IPOs during the first five years after their listing

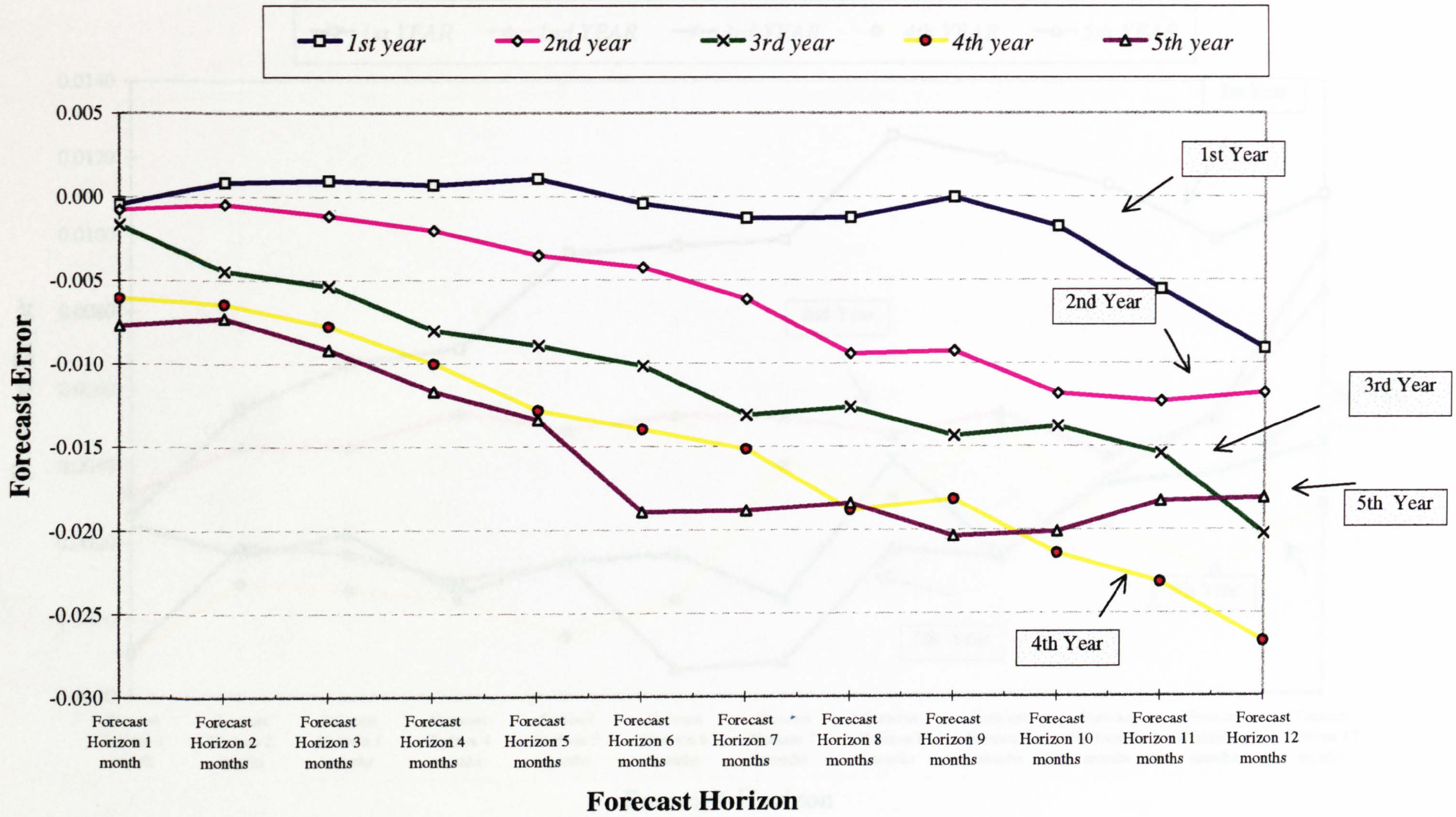


Figure 8.5

Average Forecast Errors for IPOs Adjusted for Industry and Size from Year 1 to 5 from the listing

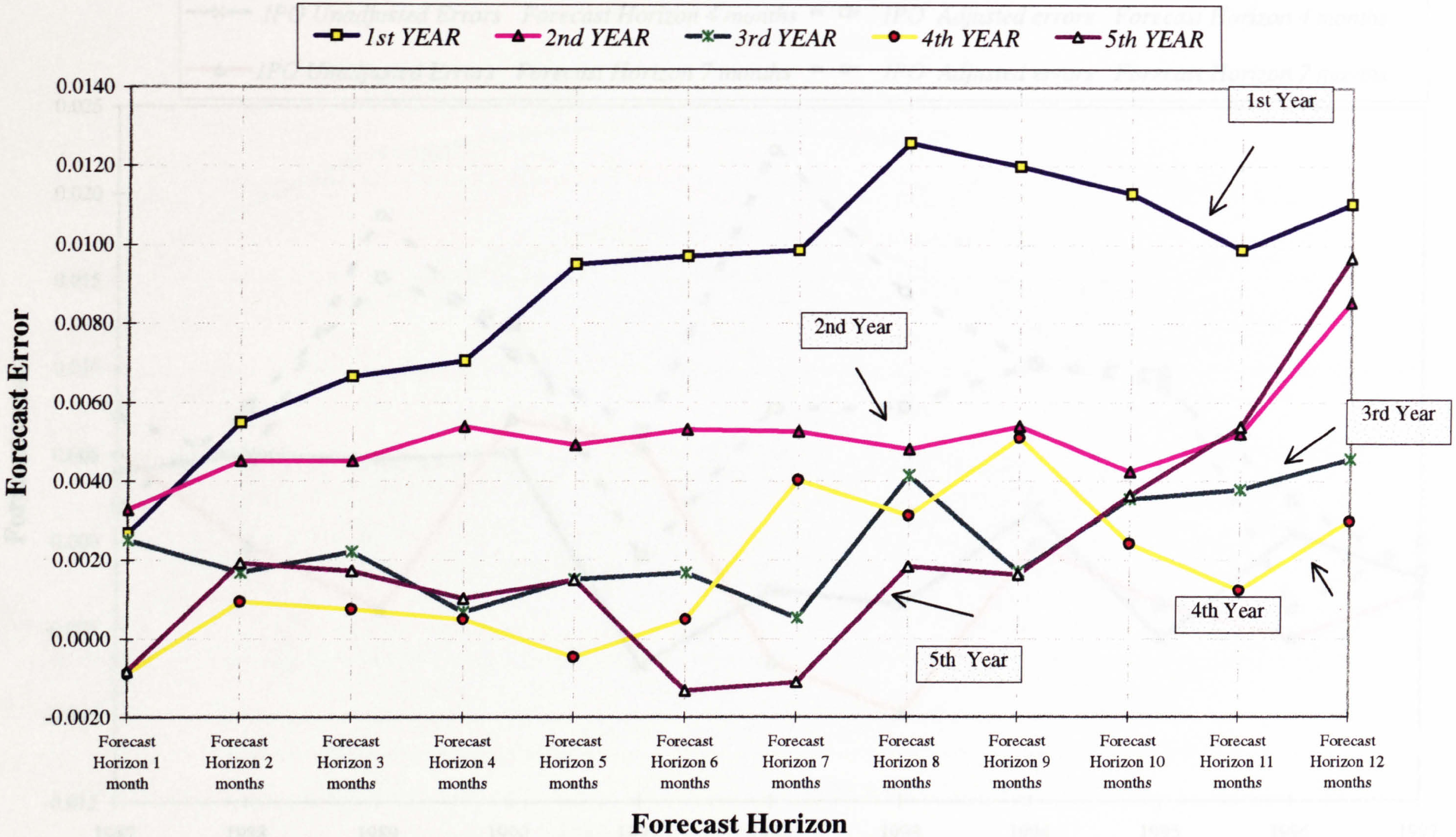


Figure 8.6

Average adjusted and unadjusted forecast errors made for IPOs in the first year of their public lives per year

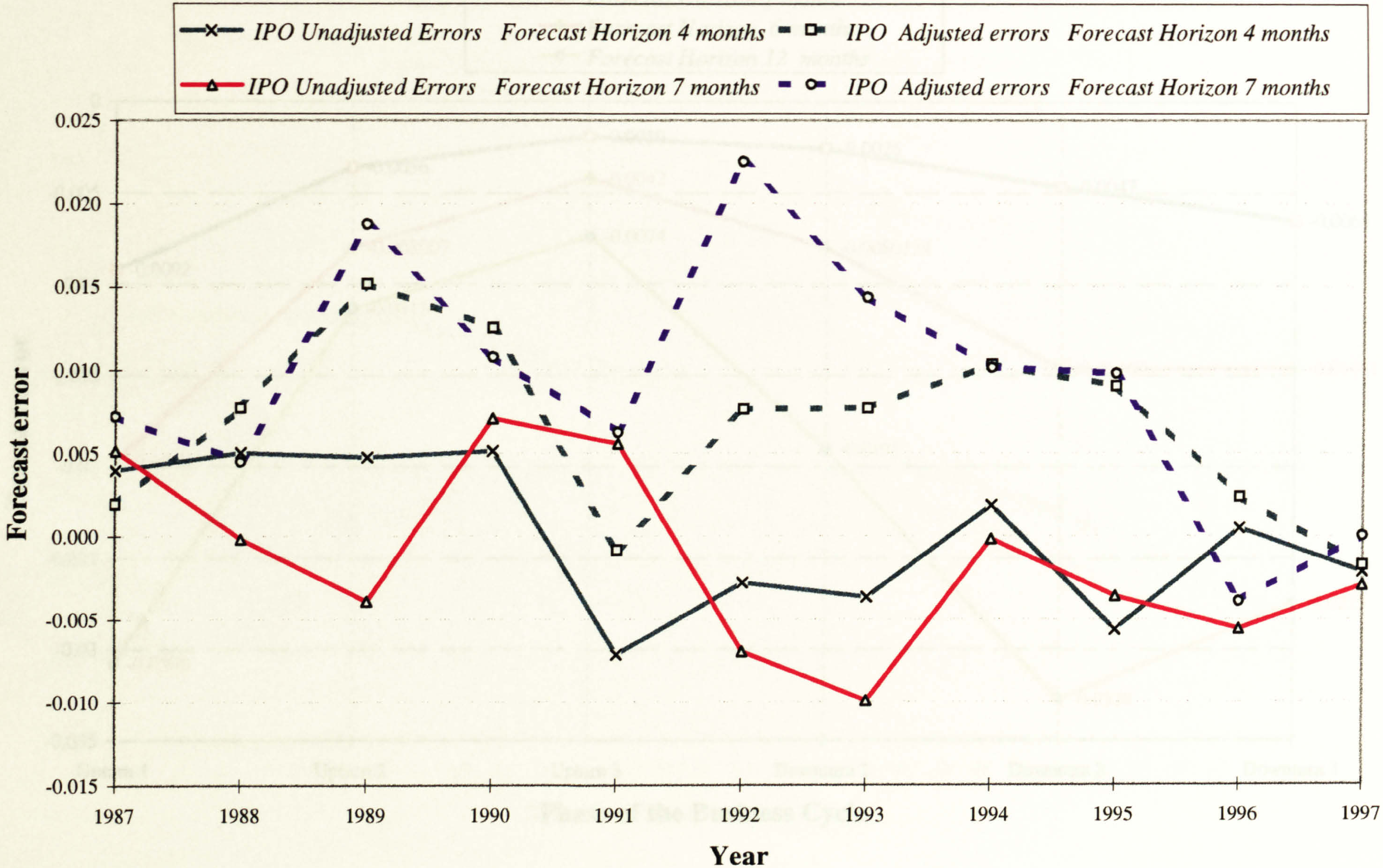


Figure 8.7
Average Forecast Errors made for all firms covered by IBES across the Business Cycle

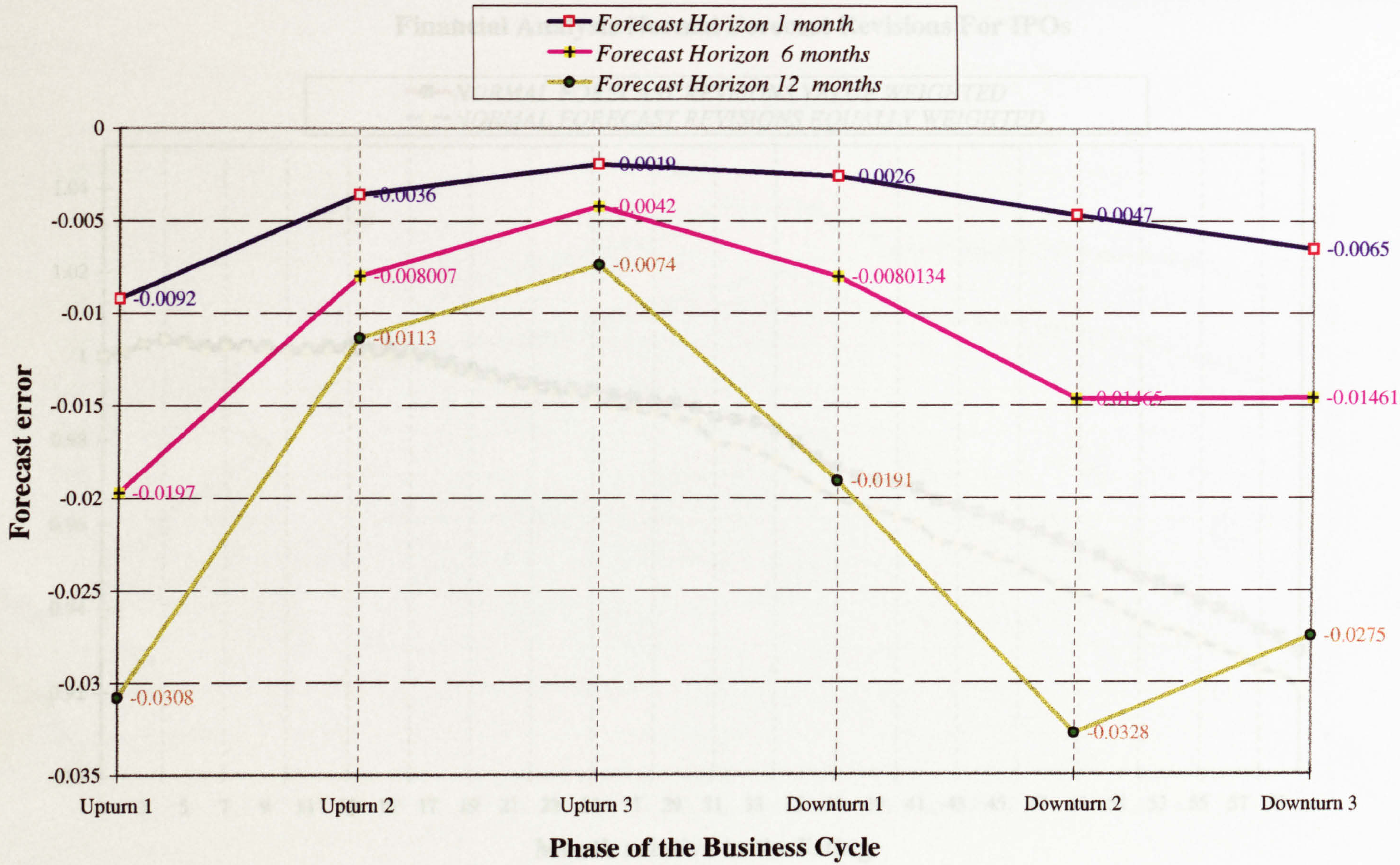


Figure 8.8

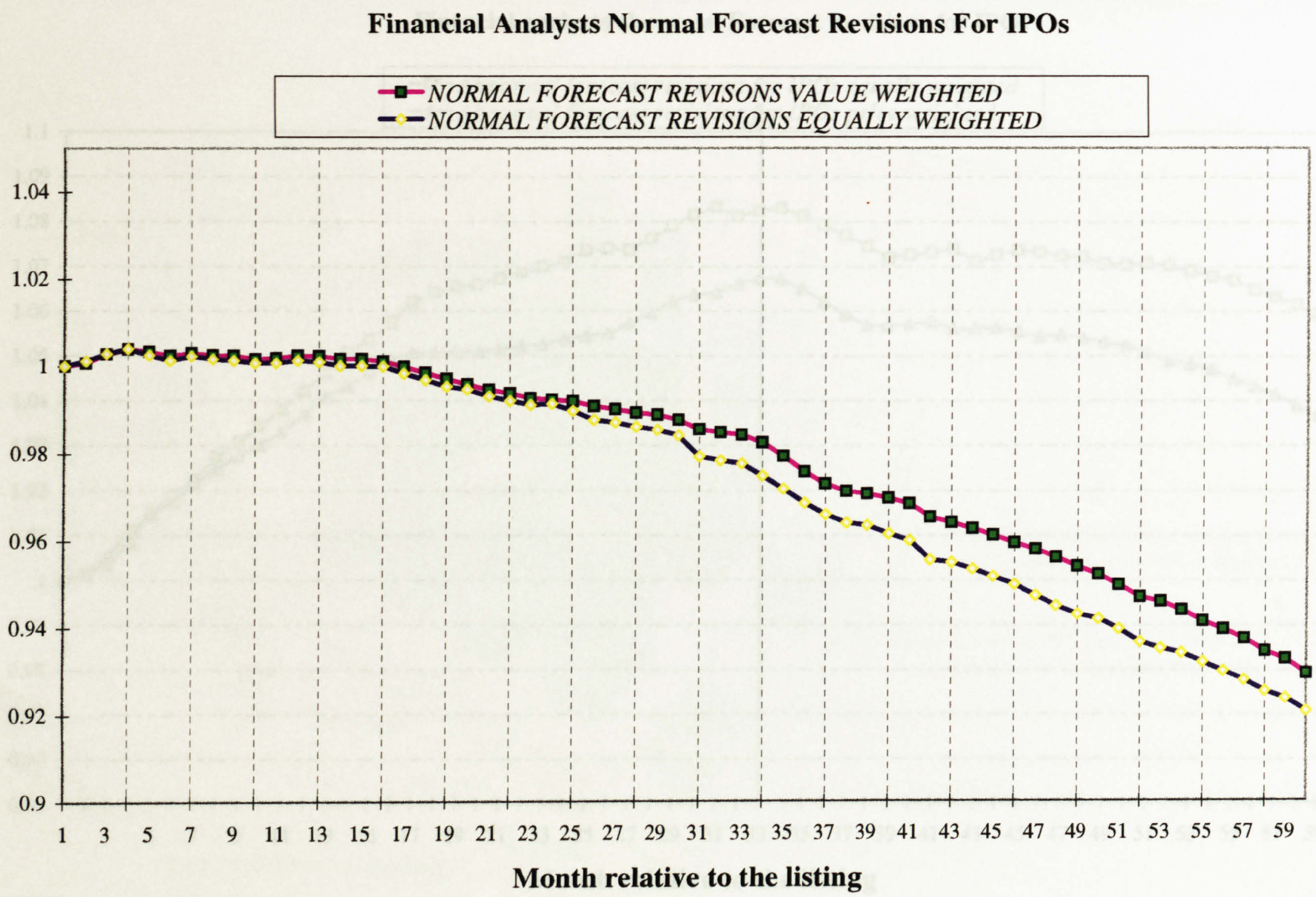
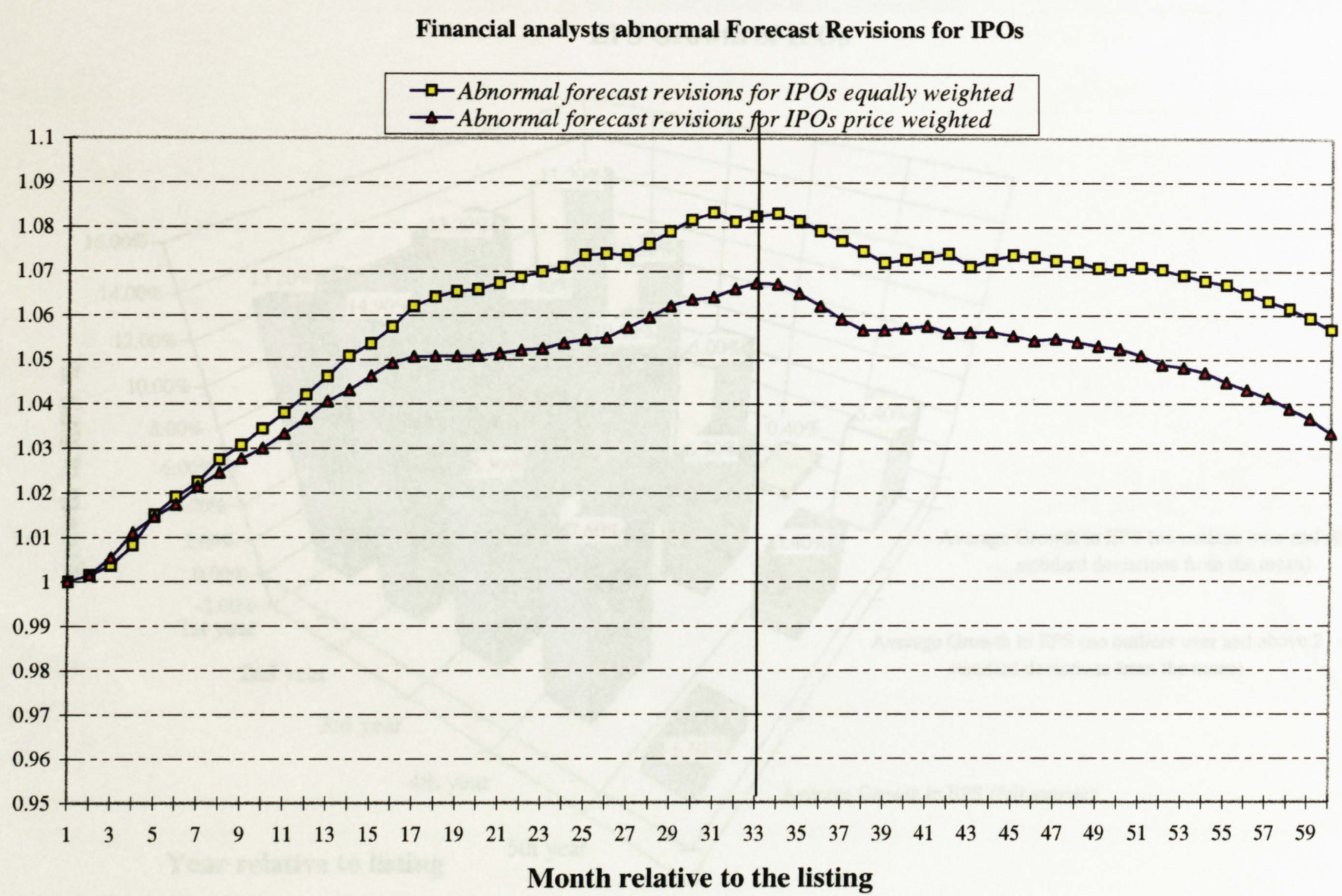

Financial Analysts Normal Forecast Revisions For IPOs
NORMAL FORECAST REVISONS VALUE WEIGHTED
NORMAL FORECAST REVISIONS EQUALLY WEIGHTED
1.04
1.02
1
0.98
0.96
0.94
0.92
0.9
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41 43 45 47 49 51 53 55 57 59
Month relative to the listing

Figure 8.9



Financial analysts abnormal Forecast Revisions for IPOs
Abnormal forecast revisions for IPOs equally weighted
Abnormal forecast revisions for IPOs price weighted
1.1
1.09
1.08
1.07
1.06
1.05
1.04
1.03
1.02
1.01
1
0.99
0.98
0.97
0.96
0.95
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41 43 45 47 49 51 53 55 57 59
Month relative to the listing

figure 8.10

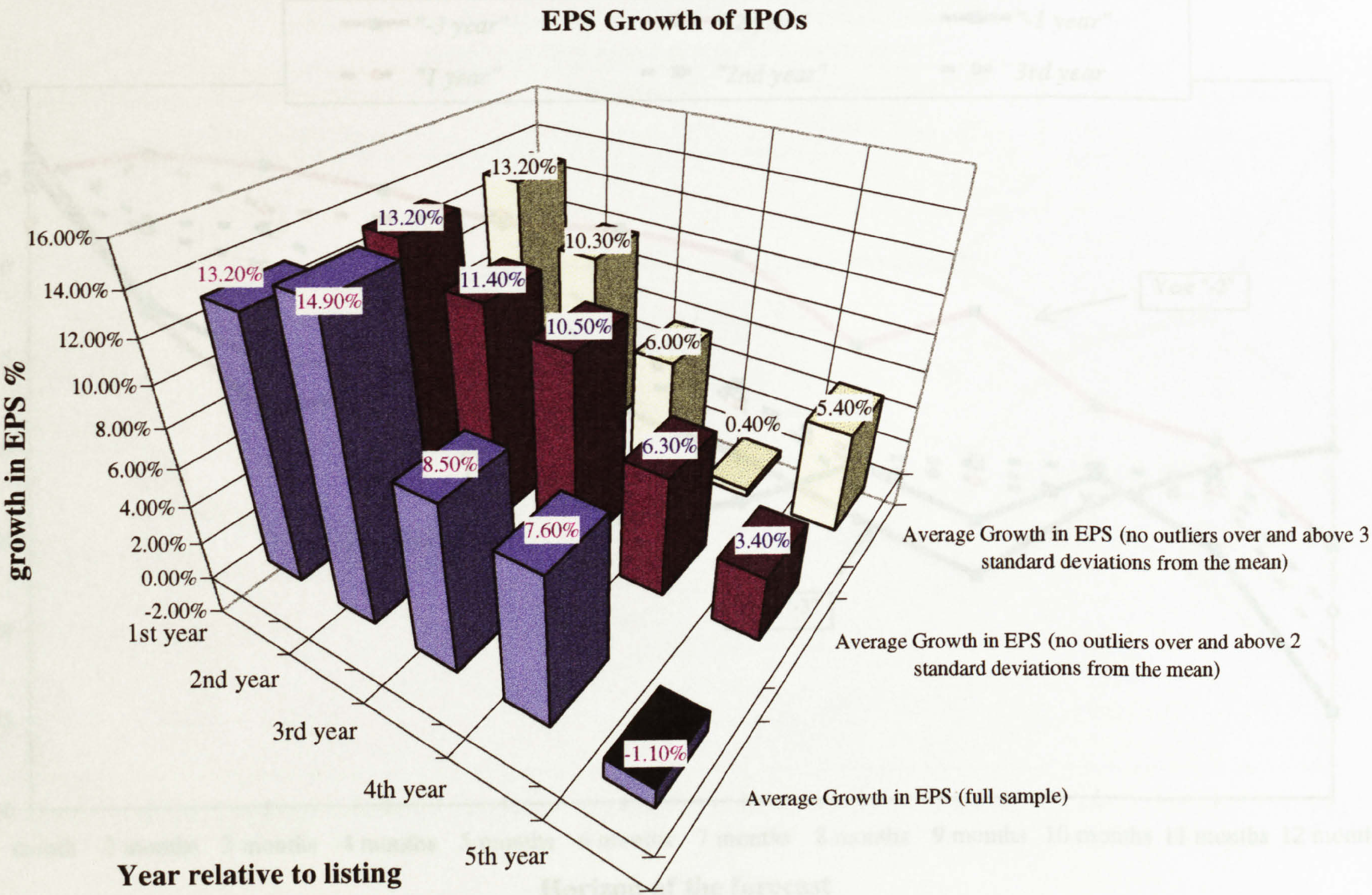

EPS Growth of IPOs
growth in EPS %
16.00%
14.00%
12.00%
10.00%
8.00%
6.00%
4.00%
2.00%
0.00%
-2.00%
1st year
2nd year
3rd year
4th year
5th year
Year relative to listing
13.20%
14.90%
8.50%
7.60%
-1.10%
13.20%
11.40%
10.50%
6.30%
3.40%
13.20%
10.30%
6.00%
0.40%
5.40%
Average Growth in EPS (no outliers over and above 3 standard deviations from the mean)
Average Growth in EPS (no outliers over and above 2 standard deviations from the mean)
Average Growth in EPS (full sample)

Figure 9.1

Average Financial Analysts' <u>Unadjusted</u> Forecast Errors in years -3 to + 3 relative to the announcement of a Rights Issue

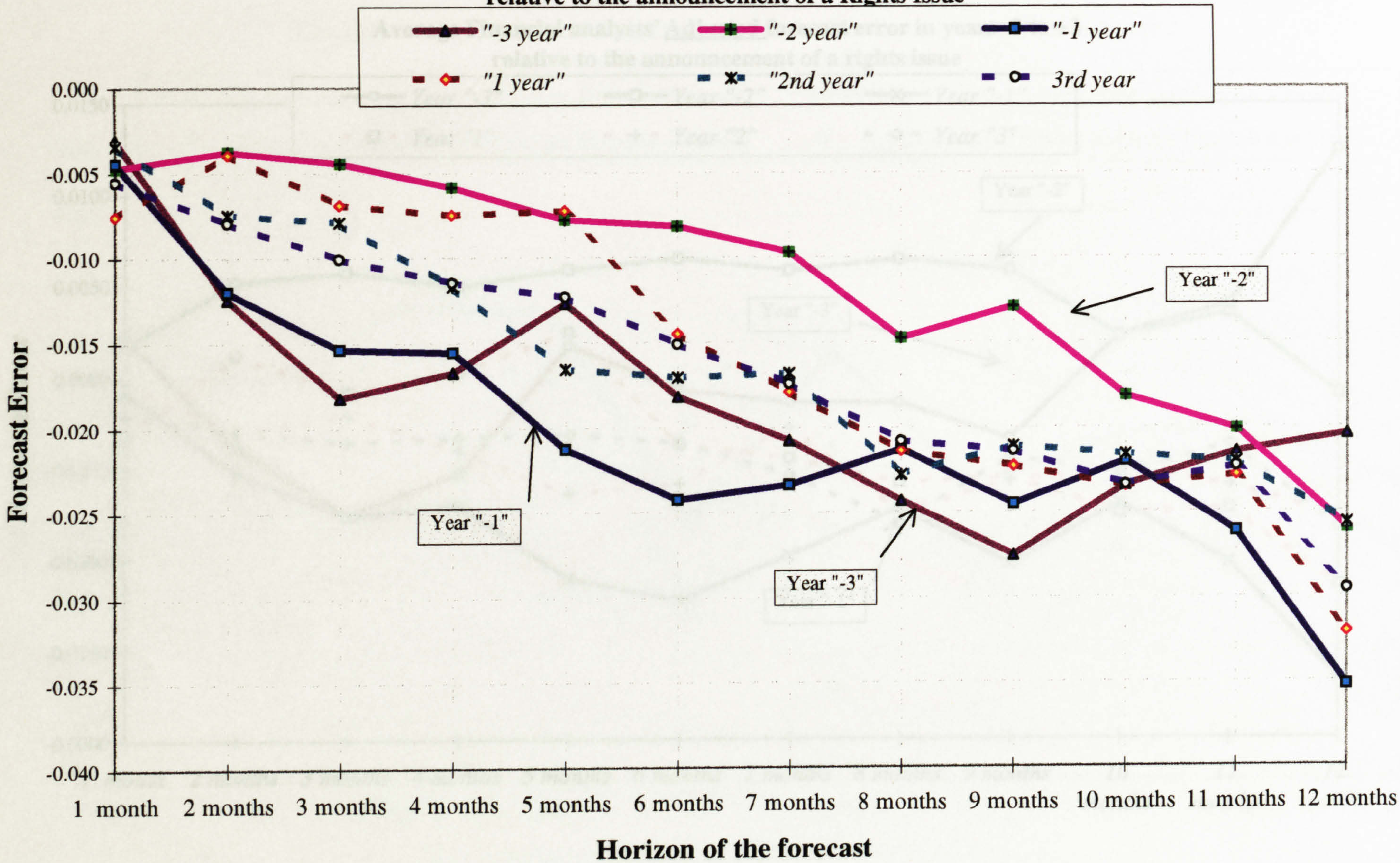


Figure 9.2

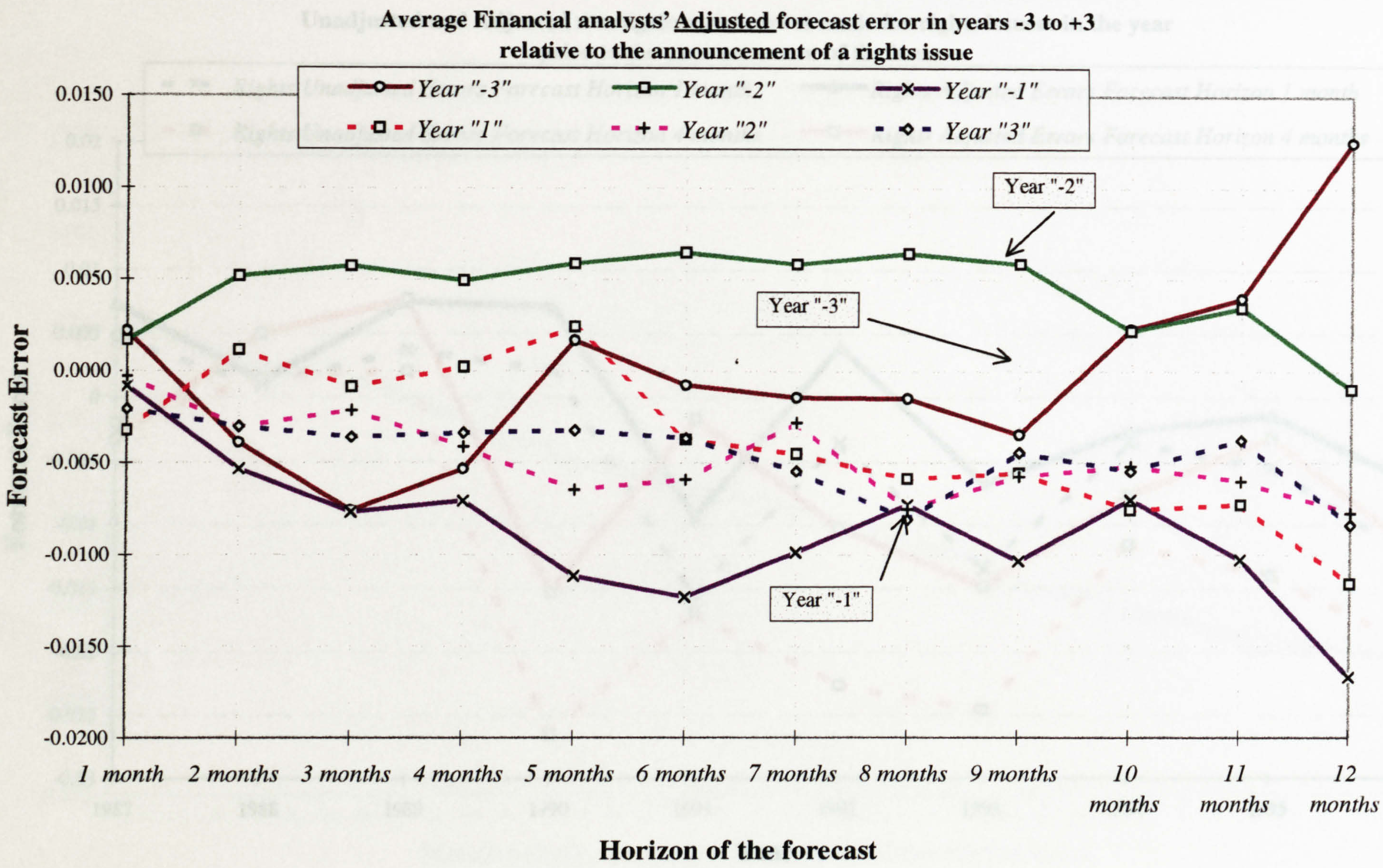
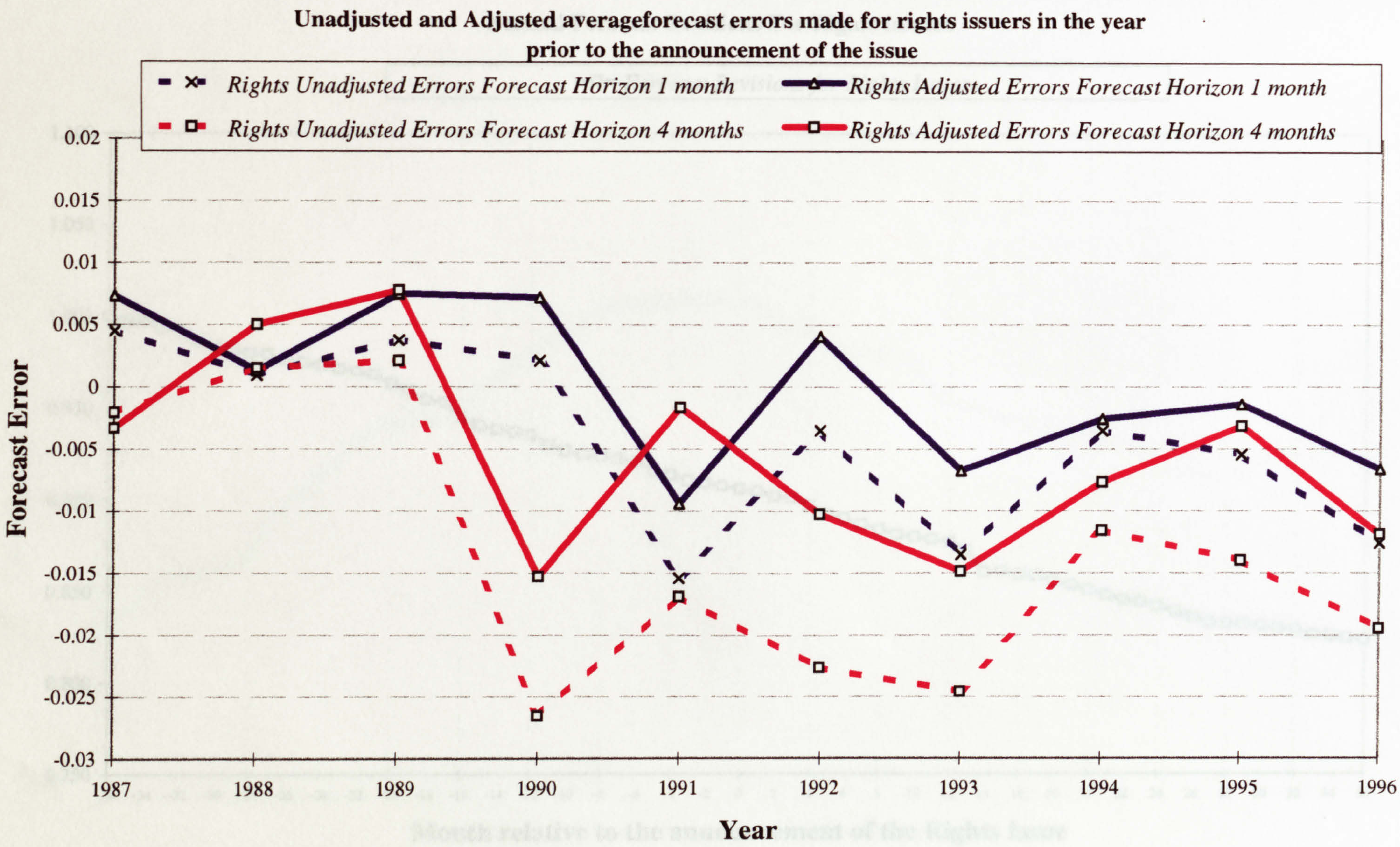

Average Financial analysts' Adjusted forecast error in years -3 to +3
relative to the announcement of a rights issue
Year "-3"
Year "-2"
Year "-1"
Year "1"
Year "2"
Year "3"
Year "-2"
Year "-3"
Year "-1"
0.0150
0.0100
0.0050
0.0000
-0.0050
-0.0100
-0.0150
-0.0200
Forecast Error
1 month
2 months
3 months
4 months
5 months
6 months
7 months
8 months
9 months
10 months
11 months
12 months
Horizon of the forecast

Figure 9.3



Unadjusted and Adjusted averageforecast errors made for rights issuers in the year prior to the announcement of the issue
Rights Unadjusted Errors Forecast Horizon 1 month
Rights Adjusted Errors Forecast Horizon 1 month
Rights Unadjusted Errors Forecast Horizon 4 months
Rights Adjusted Errors Forecast Horizon 4 months
0.02
0.015
0.01
0.005
0
-0.005
-0.01
-0.015
-0.02
-0.025
-0.03
Forecast Error
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
Year

Figure 9.4

Normal Forecast Revisions For Rights Issuers

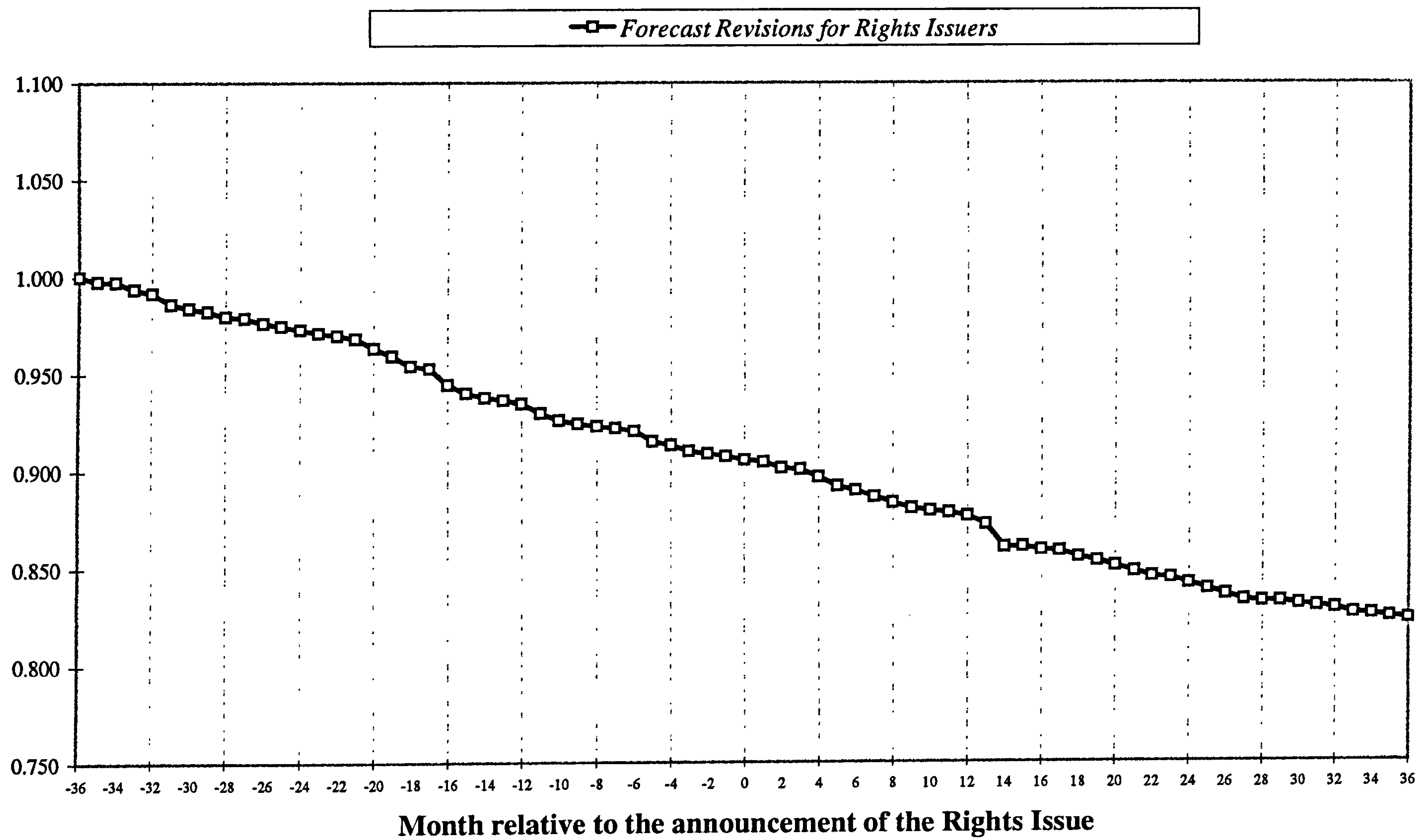
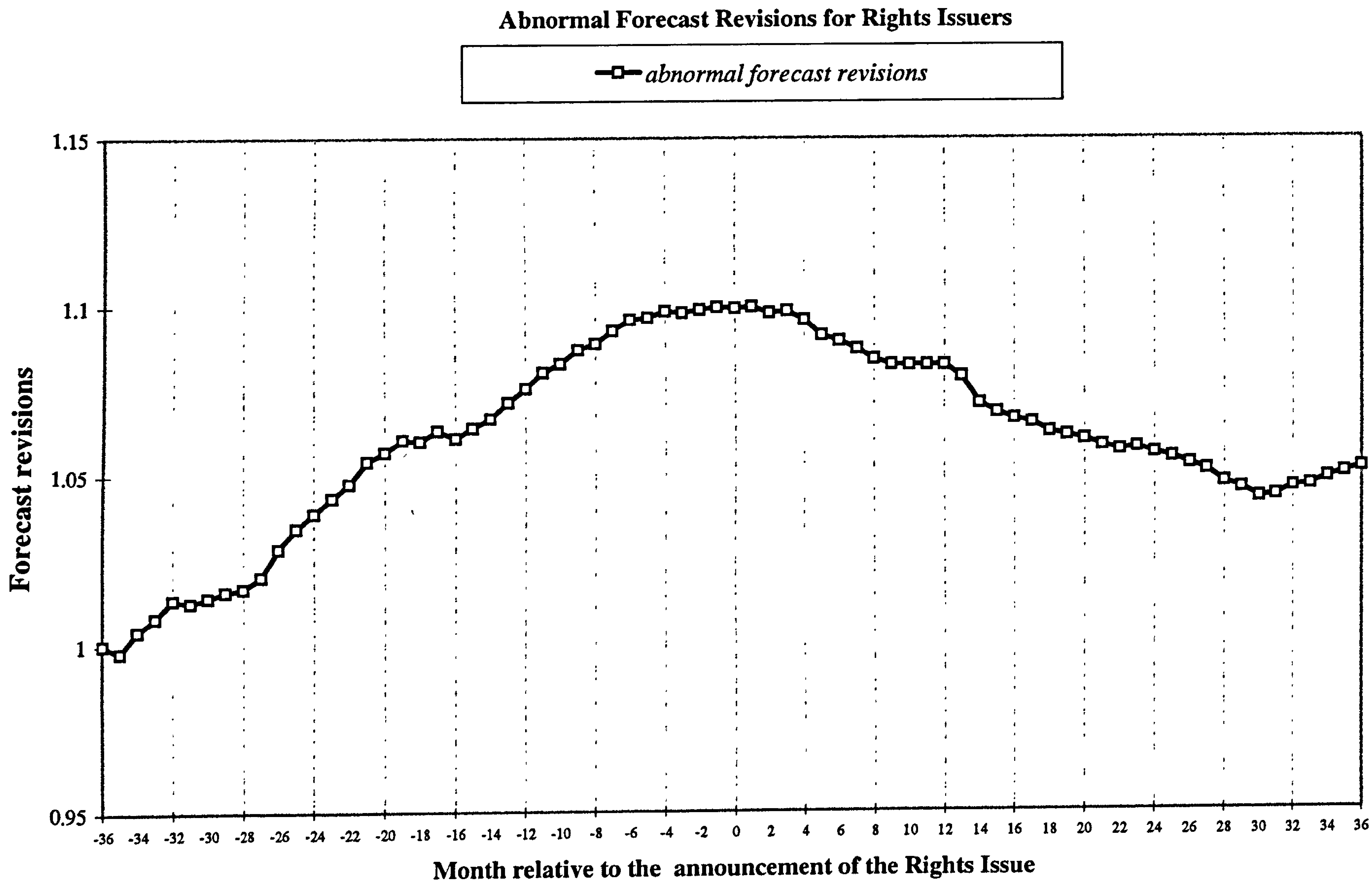


Figure 9.5


Abnormal Forecast Revisions for Rights Issuers
abnormal forecast revisions
Forecast revisions
1.15
1.1
1.05
1
0.95
-36 -34 -32 -30 -28 -26 -24 -22 -20 -18 -16 -14 -12 -10 -8 -6 -4 -2 0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36
Month relative to the announcement of the Rights Issue