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**Initial Public Offerings in the
Cyprus Stock Exchange**

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*A thesis submitted to the University of Durham in the candidacy for the
degree of Doctor of Philosophy*

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Abstract

The academic literature is quite rich in exploring Initial Public Offerings (IPOs) in developed markets and to a lesser degree in emerging markets. However, seldom one can find research on IPOs in start-up stock exchanges. Such is the case of the Cyprus Stock Exchange which was inaugurated in March 1996 and this thesis looks at IPOs that took place over a period of six years (1997-2002). Therefore, the first motivation is to explore this setting for IPOs. Moreover, the Cyprus Stock Exchange is probably the least researched stock exchange in the European Union. Out of the 12 countries that joined the European Union between 2004 and today, only Polish, Bulgarian and Hungarian IPOs are researched. Due to the comparatively young age of the Cyprus Stock Exchange and the Capital Markets in Cyprus in general at the time of the sample, the various players (underwriters, auditors, regulators, investors) were relatively inexperienced vis-à-vis the IPO process and outcomes of their actions (or rather their lack of action) affected the development of the primary market. Therefore, the second motivation stems from the specific institutional and regulatory characteristics of the CSE at the time of the sample.

Cyprus, a start-up stock exchange with a relatively new but comparably densely populated market for listed companies (150 listed companies), poses an interesting research case. In particular, the institutional characteristics that existed in the Cypriot capital market over the period 1997 to 2002 (a novice stock exchange, inexperienced market participants, lack of investment options available and restrictions in capital flows, a weak legal and institutional framework) combined with a number of socioeconomic and political factors at the time make IPOs in the CSE an interesting subject for empirical research. This ‘cocktail’ of inexperience, inadequate regulation, and limited equity culture provided the platform for the formation of a large IPO ‘bubble’ which eventually imploded.

Therefore, the motivation for the study develops the following research questions:

1. What is the level of first-day returns for Cypriot IPOs and how does that compare with the available literature?
2. What are the explanations for the level of short-run underpricing recorded?
3. What is the long-run (12-, 24- and 36-months) aftermarket performance of these IPOs and how does that compare with the available literature?

4. What are the explanations for the documented long-run aftermarket performance?
5. Did CSE IPO firms employ income increasing accruals prior to the IPO?
6. What is the level of understanding of Cypriot Managers of the IPO process in relation to the extant literature?

This thesis consists of three inter-related empirical studies on companies that were listed on the Cyprus Stock Exchange during the period 1997 to 2002. In particular, this thesis investigates the short- and long-run IPO performance of these companies (chapter 1). The variables employed are grouped into four categories namely advisor/certifier-, market/institutional-, issuer-, and IPO-specific. It is observed that CSE IPOs over the sample period offered investors the highest returns in a European market and one of the highest in the world. Following the establishment of these ultra-high returns, and the independent variables that are related to this spectacular performance, the thesis investigates whether these CSE IPO companies engaged in income increasing accruals before their IPOs (chapter 2).

In Chapter 2, both univariate as well as multivariate tests are employed to test the hypothesis that these firms actually employed earnings management pre-IPO using income increasing accruals which reversed after the 1st year of listing. In order to establish also the relationship between the short- and long-run performance of IPO firms, the latter are regressed with the earnings management variable which takes the form of discretionary accruals, total accruals or the components of accruals which are creditors, debtors, inventory, depreciation and cash flow from operations. The results show that both the short- as well as the long-run performance are also affected by the earnings management variable together with the other variables that are found to affect IPO performance in chapter 1.

Having examined the two aspects of CSE IPOs, i.e., short, long performance and earnings management, the thesis presents also the results from a questionnaire survey which aims at revealing managers of CSE listed IPO companies level of understanding of the IPO process and IPO ‘anomalies’ (chapter 3) and comparing this with the extant academic literature and also with the responses of managers in the US. Great effort, both theoretical and empirical, has been made to understand

managerial decision-making in the initial public offering (IPO) process. Most empirical IPO research relies on publicly available stock return data. However, there is a need to extend the literature by examining how well managers' motivations for conducting IPOs and understanding of the IPO process correlate with existing academic theories. By surveying managers in an emerging market to obtain a real-world perspective on the IPO process, their beliefs and experiences can be compared to both academic theory and the findings from empirical research. Cypriot managers' responses in an emerging/novice market such as the Cyprus Stock Exchange can also be compared with those of managers in a highly-developed market such as the US. The combination/integration of the above elements makes this study, the first of its kind for Initial Public Offerings in the Cyprus Stock Exchange.

The results from the first study indicate the following:

- a. The existence of ultra-high first-day returns.
- b. The existence of a hot issue period.
- c. Long-run under-performance of IPOs over a three-year period.
- d. Significant institutional deficiencies.

Specifically, it is observed that IPOs in the CSE offered investors initial (first day) returns that are among the higher in the world even after adjusting for the hot issue period of 1999. IPOs 'younger' in age, offered higher short-run returns than 'older' ones. Furthermore, smaller IPOs as measured by the size of gross proceeds perform better in the short-run than larger IPOs. Moreover, IPOs in certain industrial sectors offered investors the highest initial returns. It is observed that gross proceeds, the time from application to listing, the capital structure of the IPO firm (leverage), the standard deviation of market returns 21 days after the listing, and return on shareholders' equity provide a highly explanatory model of raw initial returns.

It is also found that Cypriot IPOs underperform in the long-run as the majority of IPOs in academic studies do. Cumulative Abnormal Returns (CARs) are negative for all years in the sample period during the 24-, and 36-month periods. In contrast, the 12-month period average CARs over the sample period are all positive. Moreover, IPOs in the 'hot' issue period have worse performance than the rest of the

pack which confirms that findings of many researchers that IPOs in ‘hot’ periods have a worse performance than the rest in the long-run.

The standard deviation of returns 21 days after the listing of the IPO, the capital structure of the IPO firm (leverage), the return on equity of the IPO firm prior to listing and its sales growth prior to listing offer a satisfactory explanatory model of 36-month cumulative average returns.

Cypriot firms exploited a ‘window of opportunity’ that was opened in the market for listing. However, the high inefficiencies that existed and continuous changes that took place in the regulatory and institutional framework of the market as reflected predominantly by the large time span between application and listing (probably the longest in the World), had as a result huge delays in listing. Consequently, IPOs were caught up by the declining returns in the secondary market and the majority of them after the third quarter of the year 2000 opened below their offer price.

In summary, the findings suggest that the institutional and market aspects of the Cypriot capital markets affected the CSE IPO returns in a manner that produced astonishingly high returns. This thesis contributes to the existing literature by demonstrating that start-up stock exchanges with institutional and regulatory deficiencies offer a platform for highly abnormal IPO returns, which fade away though, in the long-run.

The results of the second study point out to the fact that earnings management cannot be ruled out for CSE IPO firms over the sample period. Specifically, using both univariate and multivariate tests it is observed that both discretionary accruals and total accruals rise within the prospectus time frame (*pre-IPO*) and reverse *post-IPO*. Moreover, change in profitability measures, namely return on sales, return on assets and return on assets net of cash, demonstrate significant statistical difference when compared *pre-IPO* and *post-IPO*.

Finally, when the IPOs price performance (short and long) is regressed against a set of independent variables and among them, a variable for earnings management which takes the form of discretionary accruals, or total accruals, or the components

of accruals over the same period it is observed that discretionary accruals have a positive relationship with short-run returns, meaning that as accruals rise, underpricing increases. This can be attributed to the faster adjustment by underwriters of valuations to take into account income increasing accruals, and at the same time the inability of investors to revise with the same degree and speed their valuations due to the high levels of exuberance that existed in the market as these were manifested by the high level of secondary as well as primary returns as well as possibly their lack of sophistication to do so. Moreover, it is argued that the components of accruals explain well the long-run stock price performance.

The third chapter of this thesis presents the findings from a questionnaire survey of managers of listed companies in the Cyprus Stock Exchange. It is suggested that in some areas, there is harmony between managers' beliefs and academic theory. Nevertheless, in other key areas, managers' perceptions diverge from traditional academic theory. It is also evident that Cypriot managers' overall views coincide at large with views of US managers, a country with arguably the most advanced capital market in the world.

Several general implications can be drawn out of this thesis for academics, regulators and policy makers, investors, professionals such as security analysts and certifying agents and companies aiming at listing their shares. Specifically:

- The academic community, which could utilise the findings from the study to understand better the role of institutional setting on IPO 'anomalies' as well as the 'maturity' of stock exchanges on IPO price performance behaviour.
- Policy makers and regulators alike to assist them in drafting improved laws for the future as well as avoiding mistakes of the past. Specifically, the laws must aim at protecting the minority shareholders and making more accountable certifying agents and managers of IPO firms.
- Investors and portfolio managers who will be more educated and informed on making better decisions in the future regarding IPOs especially in newly formed equity capital markets. In particular, stock exchanges that lack strong institutional framework could offer excellent opportunities for ultra-high short-run returns.

- Professionals (such as corporate financiers, accountants and lawyers), especially those dealing with IPOs who will be able to draw on the findings of the study to improve the knowledge and professional practices when dealing with issuers. Principally, certifying agents to become more wary of firms that employ accruals aggressively to enhance valuation parameters and achieve higher gross proceeds.
- Prospective issuers to become more educated on matters involving avoiding the boosting accruals and consequently IPO valuations as this is a short-lived trick of becoming unpopular with market participants.

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ABBREVIATIONS

BHAR	-	Buy and Hold Abnormal Returns
CAR	-	Cumulative Abnormal Returns
CA	-	Certifying Agent
CEO	-	Chief Executive Officer
CFO	-	Cash Flow from Operations
CSE	-	Cyprus Stock Exchange
CYP or CY£	-	Cyprus Pound
CySEC	-	Cyprus Securities and Exchange Commission
CCCI	-	Cyprus Chamber of Commerce and Industry
DA	-	Discretionary Accruals
DCA	-	Discretionary Current Accruals
EM	-	Earnings Management
EPS	-	Earnings per Share
GAAP	-	General Accepted Accounting Principles
GDP	-	Gross Domestic Product
GPPE	-	Gross Property Plant and Equipment
IAS	-	International Accounting Standards
IFRS	-	International Financial Reporting Standards
IPO	-	Initial Public Offering
NDA	-	Non-Discretionary Accruals
NI	-	Net Income
P/E	-	Price to Earnings ratio
ROA	-	Return on total Assets
ROANoC	-	Return on total Assets Net of Cash
ROE	-	Return on Equity
ROS	-	Return on Sales
SEO	-	Seasoned Equity Offering
TA	-	Total Assets
TANoC	-	Total Assets Net of Cash
TACCR	-	Total Accruals

DECLARATION

The work in this thesis is based in research carried out in the School of Economics, Finance and Business, University of Durham, United Kingdom. No part of this thesis has been submitted elsewhere for any other degree or qualification and it is all my own work unless referenced to contrary in the text.

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DEDICATION

This work is dedicated to my family. For my beloved wife Niki who gave me freedom to pursue my dreams and inspiration to move on. She has been a bright beacon for me, always shining through, especially when times were dark. I am wholeheartedly indebted to you. For my treasured children, Maria, Michalis and Chrysovalanto who missed several fun times because "...Daddy had to work". This accomplishment is not just mine but it is all of ours. I hope that it will inspire all of you to realize that anything is possible as long as you believe and are willing to work hard for it. I love you all deeply and dedicate unreservedly this work to you.

**Chapter 1 - The price performance of IPOs in the Cyprus Stock
Exchange 1997-2002**

Abstract

Many studies have documented that Initial Public Offerings (IPOs) are substantially underpriced. This paper provides evidence on underpricing in the Cyprus Stock Exchange (CSE) over a period of six years (1997-2002). Given the institutional and market deficiencies that existed at the time in the novice Cypriot capital market and the transformation of the Cypriot economy and society as a prelude to entry in the European Union, these had profound effects on the proper functioning of the primary capital markets. With a sample of 79 IPOs it is observed that the 'hot' market of 1999-2001 produced exceptionally high first day returns, which are amongst the highest in the world and the highest amongst European countries. Investigation of factors influencing the initial performance of IPOs in the Cyprus Stock Exchange shows that market and institutional variables together with issuer-specific variables were the main drivers of this performance. In particular, the length of time between application and listing, the standard deviation of returns 21 days after the listing, the degree of leverage of IPO firms, their return on equity as well as their size, were the main statistically significant variables. It is also evident that Cypriot IPOs underperform in the long-run, with those IPOs in the 'hot' market having the worst performance. Their long run underperformance is influenced mainly by the standard deviation of IPO returns during the first 21 days after the listing, the level of leverage and their return on equity as these are calculated from their last audited accounts found in the prospectus.

I. Introduction

Whether or not to 'go public' is probably the most important decision in the life cycle of a company and its shareholders. Going public involves having the shares in a company quoted on a stock exchange, and companies usually go public via an initial public offering (IPO) of their shares to prospective investors. Stock exchanges serve two main functions, namely, to facilitate the raising of new equity capital, and to enable trading in shares and other securities to take place. The capital raising function is usually referred to as the primary market and the subsequent trading as the secondary market. It is important for an economy that both markets operate efficiently. If going public is a relatively easy and inexpensive process, then this will increase the availability and lower the cost of equity finance. Even if new equity capital is not required, and the original investors simply want to sell part, or all, of their stake in a company, the ability to do this efficiently will encourage entrepreneurship and, ultimately, economic growth. Similarly, a liquid and transparent secondary market will encourage investors to participate in the stock market and should again increase the availability of equity capital and lower investors' required returns.

To minimise certain risks involved in the public sale of their securities, firms retain underwriters who undertake the pricing and selling of the new securities. The conditions under which new securities are offered to the public and the role of the underwriter are both affected by the regulatory and institutional environment of the local IPO market.

The academic literature on IPOs has grown quite rapidly over the last decade. Numerous studies have investigated unseasoned new issues, especially in the United States of America (despite the fact that European IPO activity has overtaken U.S. IPO activity during the late 1990s (Ritter, (2003b)). This was brought about by the introduction of 'equity culture' which was also fostered by privatisation programmes and the convergence of listing requirements, reporting rules and pricing mechanisms across Europe). Much of this literature has focused mainly on three empirical

patterns: (i) initial (or short-run) underpricing; (ii) long-run (under)performance and (iii) cycles in the number of IPOs and in the average first day-returns.

First, there is now overwhelming international evidence of initial underpricing. That is, the shares of companies that go public are offered to investors at prices considerably below the prices at which they subsequently trade on the stock market. Researchers offer several theories that argue that underpricing of IPOs is an equilibrium phenomenon in an efficient capital market. The important implication for initial underpricing is that it can be thought of as raising the cost – to the original owners – of raising equity finance.

When shares are sold at a price below that at which they subsequently trade, the initial owners essentially ‘leave money on the table’ for the investors who purchase the shares at the IPO. In the case of sales of secondary equity, the wealth loss associated with underpricing is obvious; the original shareholders could have sold their shares at a higher price had they retained them and sold them in the after-market. In the case of primary equity sales, the wealth loss occurs via the dilution of the original shareholders’ stakes in the company. Initial underpricing of the IPO will mean that the new investors will have acquired their stake in the company for less than it was worth, to the detriment of the original shareholders. Put another way, in the absence of underpricing, the company could have raised the same sum of money by selling fewer shares, and thereby would have avoided diluting the holdings of the original investors.

The range of underpricing varies considerably amongst countries but it is evident in different national markets with various degrees of development and diverse regulatory and institutional regimes. For example, initial returns range from 4.2% in Russia to 137.4% in China¹, 149% in Jordan and 264.5% in Saudi Arabia (see Loughran, Ritter and Rydgvist (2013)). Underpricing seems to fluctuate over time.

¹ *Underpricing of A shares in the Shanghai Stock Exchange is reported to be very high. Mok and Hui (1998) find underpricing to be 289% whereas Su and Fleischer (1999) show that underpricing could exceed 948% if IPOs from earlier years were included in the sample. Also Tian (2011) using a sample of 1387 IPOs over a period of 12 years (1992-2004) finds that the average underpricing in Chinese A shares is 247% and the median 122%. Tian finds that this severe underpricing comes mainly from government intervention and d some investment risks such as lock-up risks, grabbing risks and tunneling risks found in Chinese IPOs.*

Since 1960, the price discount has averaged around 19%, but with considerable fluctuations, averaging 21% in the 1960s, 12% in the 1970s, 16% in the 1980s, 21% in the 1990s and 40% in the 4 years since 2000 (Ljungqvist, 2005). The level of underpricing was even stronger in the late 1990s and in the first years of the new millennium, coinciding with the Internet IPO boom.

The second anomaly that has generated much research is the evidence that the shares of companies that go public appear to suffer long-run underperformance. That is, relative to other quoted companies, investors appear to lose out by continuing to hold the shares of companies that have recently gone public. As a result, the immediate gain that investors typically make as a result of the underpricing of IPOs tends to be accompanied by poor relative performance thereafter. Such underperformance seems to last a surprising length of time, with some studies suggesting significant poor returns up to five years after the initial floatation. However, this anomaly has not been empirically found in all markets. For example, in Finland, the return over a 3-year period is underperformance of 61.5% whereas in Greece over the same time window the return is over performance of 38% (see Gajewski and Gresse (2006) and also Boutron et al. (2007)).

Early researchers show that there are pronounced cycles in the number of new issues per month and also in the average initial returns per month. Further, there appears to be a lead-lag relation between the two series. It seems that, periods of high and rising initial returns tend to be followed by spurts of IPOs, which are themselves followed by periods of lower initial returns. This is the third anomaly surrounding the IPO literature.

IPOs were the hottest financial act of the late 1990s in many countries around the world. Cyprus followed suit and the inauguration of the official Cyprus Stock Exchange (CSE) in March 1996 signalled a new era in the Cypriot capital markets. Because of the restrictions that existed at the time in the Cypriot economy on capital flows, Cypriot investors and households could only invest their money in deposits, shares and real estate in Cyprus. When in mid-1999 the IPO boom began lasting almost 2 years, it had as a result, a total of 103 new listings, the emergence of numerous brokerage houses and the doubling in the direct ownership of listed

equities by Cypriot households. The Cypriot population engaged at large in a frenzy of share trading which saw it through the ‘boom and bust’ of the Cyprus Stock Exchange General Index in the years 1999-2001. Many IPOs ‘left considerable sums of money on the table’ and subsequently their shares went on a down-spiral that resulted in the CSE losing 69.4% of its capitalisation within two years (end of 1999 to end of 2001). All these ‘anomalies’ constitute the IPO phenomenon in Cyprus, which had its share of winners and losers.

The purpose of this chapter is to investigate how the underpricing of IPOs is affected by a number of institutional factors that were present over the sample in the Cyprus capital markets during the period examined. Moreover, another aim of this chapter is to examine whether both short- and long-run IPO share price performance documented in the United States and other developed markets also applies to a start-up capital market such as Cyprus.

Cyprus, being one of the smallest economies in Europe with a relatively new but densely populated stock exchange (150 listed companies), poses an interesting case. In particular, the institutional characteristics that existed in the Cypriot capital markets over the period 1997-2002 (a novice stock exchange, inexperienced market participants, lack of investment options available and restrictions in capital flows, weak legal and institutional framework vis-à-vis capital markets) combined with a number of socioeconomic and political factors at the time make IPOs in the CSE an interesting subject for empirical research. In particular, researchers such as Yung et al. (2008) argue that an exogenous positive shock to an economy can lead to a greater number of firms going public and this wave of IPOs exhibits high underpricing.

Moreover, the Cypriot economy is heavily dependent on family enterprises. These comprise 85%-90% of the total number of enterprises (which is one of the highest in the EU) whereas this estimate includes more than half of the listed companies². In the family-business literature, an IPO is usually described as a solution to solve two main types of problems: lack of capital, and succession. Empirical research on IPOs

² *Overview of Family Business Relevant Issues, Country Fiche: Cyprus, 2008, European Commission Report*

has concentrated mainly on financial aspects. Funding is one of the challenges family businesses face. Many family businesses fail because of insufficient capital and heavy debt loads (Peterson, Kozmetsky, and Ridgway (1983); Wucinich, (1979); De Visscher, Aronoff and Ward, (1995)). According to some authors, the most important reason for going public is to infuse a significant amount of investment capital into the firm (Arkebauer, (1991)). Going public, in fact, allows firms to access external financial resources. These resources can be used either to compensate for a lack of capital or high debt/equity levels, or as means to seize and finance growth opportunities (Harvey, Evans, (1995); Mahérault, (2000)). Compared with a private placement, the capital that can be collected on the market is usually larger and less expensive, and it involves less dilution. In the long run, also, the access to the stock market increases the company's borrowing power and enhances its bargaining power for the reduction of borrowing costs (Krips-Newman, (1985)). Moreover, since stocks are more easily transferable, banks will be more willing to accept the stocks as collateral.

Another important group of reasons for a family business going public pointed out by literature, concerns succession, family dynamics and continuity of the firm. As generations go by, the number of shareholders increases, and their ties to each other and to the company loosen. The fragmentation of the ownership increases the probability that a family shareholder wants or needs to sell or to exchange stocks. The evaluation of the shares often creates problems: if a company is listed, however, its stocks are negotiable at any given moment on an open and free market, where the prices are public and official (Ravasi, D. and G. Marchisio, (2000)). In a public company, governance and executive roles tend to be assigned according to personal competencies, without regard to dynastic matters. For this reason, listed family businesses are better able to attract professional managers, thus ensuring a most effective strategic direction.

Moreover, Ravasi and Marchisio (2000) site yet another set of reasons for family firms going public. They argue that family firms go public as a way to improve their reputational and social capital, with beneficial effects on their capacity to access external resources and opportunities for new entrepreneurial ventures. Their study reveals that besides the usual financial motives, the decision to go public is

increasingly stimulated by a search for a higher visibility and is seen as an important step in the expansion and reinforcement of the network of relationships that sustains entrepreneurial activity.

Research shows that the quality of a country's legal framework, as measured by its level of investors' protection, the overall quality of its legal system and its level of legal enforcement reduces the level of underpricing significantly. Also, increased protection of shareholders and greater accounting transparency contribute negatively to variations in underpricing. Research also shows that underpricing is higher when the majority shareholders have more leeway to repress minority owners. Minority and other investors who generally enjoy only security benefits are reluctant to invest in companies with weak investor protection. Stronger investor protection leads to a decrease in investment risk. Poor legal environments raise the cost of capital for firms through greater underpricing.

Clearly, the above regulatory and institutional deficiencies of the Cypriot capital markets have had a negative effect on the primary market and the quality of services offered since they hindered the proper functioning of the capital markets. The long time span between application and listing, the high volatility levels that existed in the market, the fact that due diligence was not a requirement for a firm going public coupled with the short-time life span that the CSE was in existence, the strong competition that existed amongst underwriters (who were mainly brokers), and the relatively inexperienced investors and regulators, were factors that contributed to the improper functioning of the primary markets.

The Cyprus Stock Exchange is probably also the least researched stock exchange in the European Union. Out of the 12 countries that joined the European Union between 2004 and today, only Polish, Bulgarian and Hungarian IPOs are researched. Therefore, Cyprus makes an interesting case being the second smallest country³ member of the European Union. In fact, one could argue that by studying IPOs in the CSE, one could observe how developed stock exchanges behaved in so far as

³ *Malta is the smallest country member*

unseasoned equity offerings are concerned in the very early days of their history. It is like taking a journey back in time, the primordial roots of equity primary markets.

The aim of this chapter is four-fold. First, to record the level of first-day returns for Cypriot IPOs over a recent and relatively long period (January 1997 to December 2002) and compare it with available literature.

The second objective is to explain the level of short-run underpricing recorded. Several explanation models derived from the theoretical and empirical literature will be employed towards this end. The investigation will focus on the cross-sectional distribution of these returns (e.g., underwriter reputation, auditor reputation, firm size, firm age, issue size, market performance, institutional factors, etc.).

The third objective is to measure the long-run (36 months) aftermarket performance of these IPOs. The aim is to detect whether it has been possible to earn significant positive abnormal returns by purchasing the issues at the close of the first day of aftermarket trading and holding them for up to 36 months.

The fourth objective is to give some explanations for the documented long-run aftermarket (under) performance.

Overall, it becomes apparent that CSE IPOs offered ultra-high first-day returns coupled with the existence of a hot issue period and long-run underperformance over a three-year period. Cypriot firms exploited a ‘window of opportunity’ that was opened in the market. However, applications for listing got congested as the inefficiencies of the legal and regulatory framework were exacerbated by the continuous changes that took place and were reflected predominately by the large time span between application and listing which is probably the longest on record in any market.

In summary, the findings suggest that the institutional and market aspects of the Cypriot capital markets affected the CSE IPO returns in a manner that produced astonishingly high returns. This chapter of the thesis contributes to the existing literature by demonstrating that start-up stock exchanges with institutional and

regulatory deficiencies offer a platform for highly abnormal IPO returns which fade away though in the long-run as the various ‘players’ evolve and mature and the deficiencies are corrected.

To the best of the author’s knowledge, there is no other study of Initial Public Offerings in the Cyprus Stock Exchange, which approaches the subject from almost all angles i.e., the short- and long-run performance, earnings management and survey of the managers of IPO listed firms to compare practice with extant academic research. Therefore, this is the most important contribution of this thesis. Most of the studies made are on the US and UK stock markets which dominate empirical applications. These stock markets are very large and highly liquid, with turnover ratios well exceeding 100% each year. Moreover, these markets are quite transparent, the law protects minority shareholders, and mechanisms exist such that underwriters, issuers and investors alike can devise effective buy-sell strategies (e.g., short sales, lock-ups, green shoe options) which can benefit the market by reducing excessive returns. Also, listing of unseasoned equity takes place quite fast and ‘waiting in the queue’ is only a matter of few weeks and not months (or even years). On the other hand, the CSE is a start-up stock exchange, with a market capitalisation less than 1% of that of the UK or US, and its turnover ratio has been on average circa 29.9% during the period of the sample. It demonstrates regulatory and institutional inefficiencies (at the time of the sample period) and the key players are inexperienced. It is thus of interest to ascertain whether the key theories that have been developed to explain the patterns of IPO pricing in developed markets also apply in the context of a small island economy with a novice stock exchange.

In part II of this chapter of the thesis, the extant literature on IPO short- and long-run performance is reviewed followed by part III which provides a brief introduction to the Cyprus Economy. This is followed by Part IV which describes the prevailing regulatory and institutional framework of going public in the Cyprus Stock Exchange. Part V then follows which presents the research design, and part VI gives the data analysis including the empirical results. The chapter ends with part VII which is the conclusion.

II. Literature review

A. The going public decision

A large volume of researchers demonstrate that investors purchasing initial public offerings (IPOs) of common shares earn a large positive abnormal return in the early aftermarket period. Such IPO underpricing is widely documented and appears to be internationally omnipresent. Researchers also document that IPOs tend to underperform in the long run. However, international evidence on the long-run performance of IPOs is less extensive than the one on underpricing, and less unanimously conclusive. Ritter and Welch (2002) divide existing theories on this aspect of IPOs in Life Cycle and Market Timing theories.

i Life cycle theories

The first formal theory of the going public decision appeared in a paper by Zingales (1995). He observed that it is much easier for a potential acquirer to spot a potential takeover target when it is public. Moreover, entrepreneurs realise that acquirers can pressure targets on pricing concessions more than they can pressure outside investors. By going public, entrepreneurs thus help facilitate the acquisition of their company for a higher value than what they would get from an outright sale. In contrast, Black and Gilson (1998) point out that, entrepreneurs often regain control from the venture capitalists in venture-capital-backed companies at the IPO. Thus, many IPOs are not so much exits for the entrepreneur as they are for the venture capitalists. Brau, Francis, and Kohers (2003) using U.S. data examine the choice between an IPO and selling the firm to a publicly traded buyer, conditional on wishing to sell the company, having no data on companies that stay private. Private firms are more likely to choose the IPO route over a takeover, the larger their transaction size and the lower the market-to-book ratio in the industry.

Chemmanur and Fulghieri (1999) develop the more conventional wisdom that IPOs allow more dispersion of ownership, with its advantages and disadvantages. Pre-IPO ‘angel’ investors or venture capitalists hold undiversified portfolios and, therefore, are not willing to pay as high a price as diversified public-market investors. There

are fixed costs associated with going public, however, and proprietary information cannot costlessly revealed. Thus, early in its life cycle, a firm will be private, but if it grows sufficiently large, it becomes optimal to go public.

Bodnaruk, Kandel, Massa and Simonov (2008) argue that a less diversified shareholder has more to gain from taking the company public and would be more willing to accept a lower price for the sale of his shares, i.e., tolerate higher underpricing. They study a sample of all the 124 IPOs that took place in Sweden in the period 1995-2001. They also obtained detailed information on the portfolio composition of all the investors in the companies being taken public, both before and after the IPO, as well as the portfolio composition of investors in similar companies not taken public (in terms of size, market-to-book ratio and industry). They show that companies held by less diversified shareholders are more likely to go public and suffer a higher underpricing. The authors also show that, as predicted, the degree of diversification explains a significant (both economically and statistically) part of the probability of going public, and may account for between one third and one half of the reported underpricing. The authors suggest that the degree of diversification of controlling shareholders should play a prominent role in the discussion of the process of going public.

Public trading per se has costs and benefits. Maksimovic and Pichler (2001) point out that a high public price can attract product market competition. Public trading, however, can, in itself, add value to the firm, as it may inspire more faith in the firm from other investors, customers, creditors, and suppliers. Being the first in an industry to go public sometimes confers a first-mover advantage.

Demers and Lewellen (2003) examine the impact of IPO underpricing on website traffic, which is a direct measure of product market performance for internet firms. They find that web traffic growth for the month after the IPO is positively and significantly associated with initial returns, and the effect is economically significant. They also investigate media reaction to initial returns for a broader sample of IPOs. Their results suggest that the marketing benefits of underpricing extend beyond the internet sector and the 'hot issues' market of the late 1990s.

Chemmanur and He (2011) develop a model where two firms with differing productivity levels compete in an industry with significant probability of a positive productivity shock. They find that even firms with sufficient internal capital to fund their investments may go public driven by the possibility of their product market competitors going public. Their model also predicts that IPO waves may arise in equilibrium even in industries which do not experience a productivity shock.

ii. Market-timing theories

Lucas and McDonald (1990) develop an asymmetric information model where firms postpone their equity issue if they know they are currently undervalued. If a bear market places too low a value on the firm, given the knowledge of entrepreneurs, then they will delay their IPOs until a bull market offers more favourable pricing. In Choe, Masulis and Nanda (1993), firms avoid issuing equity in periods where few good-quality firms issue. The authors find that firms tend to increase equity offerings more frequently in expansionary periods. Lowry and Schwert (2002) argue that recent first-day share performance of firms going public leads other firms to decide to go public. Çolak and Günay (2011) develop a model that shows that high quality IPO firms may benefit from strategically delaying issuance to obtain more info about the market conditions. They show that pioneering IPOs are usually not the best ones within an expanding IPO cycle and actually the opposite may be happening. Their model also partially explains IPO clustering. They find that as the first successful IPO comes to market economic and market uncertainty is lifted, investors become more knowledgeable and all the remaining waiting firms, which were strategically delaying their issuance, are entering the market in a massive scale.

Other theories have argued that markets provide valuable information to entrepreneurs who respond to increased growth opportunities signalled by higher prices (Subrahmanyam and Titman (1999); Schultz (2003)). Using long-run returns, Ritter (1991) and Loughran and Ritter (1995) posit that firms time their IPOs to take advantage of ‘windows of opportunity’ that allow them to get the most attractive offering prices.

Ritter and Welch (2002) suggest that in addition to the above theories for IPO volume fluctuations, a plausible semi-rational theory without asymmetric information can also explain cycles in issuing activity. Entrepreneurs' sense of enterprise value derives more from their internal perspective, their day-to-day involvement with the underlying business fundamentals, and less from the public stock market. Sudden changes in the value of publicly traded firms are not as quickly absorbed into the private sense of value held by entrepreneurs. Thus, entrepreneurs adjust their valuation with a lag. As a result, even if the market is driven by irrational public sentiment or the entrepreneur's price is driven by irrational private sentiment, entrepreneurs are more inclined to sell shares after valuations in the public market have increased.

iii. Evidence

Ritter and Welch (2002) assert that evidence on these theories is hard to test and this is because researchers usually observe the set of firms actually going public. They do not observe how many private firms could have gone public. There are certain researchers though e.g., Pagano, Panetta and Zingales (1998) that escape this criticism and using a unique set of Italian firms find that larger companies in industries with high market-to-book ratios are more likely to go public and companies going public seem to have reduced their credit risk. They also find that IPO activity follows high investment and growth and vice-versa. They also find that IPOs are undertaken to maximise the incumbents' proceeds from an eventual sale of the company.

Lerner (1994) also finds that the industry market-to-book ratios have substantial effect on the decision to go public. His study focuses on the U.S. biotechnology industry.

Boehmer and Ljungqvist (2004) using a sample of 330 private German firms that between 1984 and 1995 announced their intention to go public in the short- or medium-term find that the average sample company took more than two years from announcing its IPO intention to actually go public. Importantly, they also find that there is substantial cross-sectional variation in the time-to-IPO. Boehmer and

Lundqvist (2004) also find that controlling for private benefits, increases over time in measures of firms' investment opportunities and valuations have significant and sizeable effect on the likelihood that firms will complete an IPO. They also show that these effects are distinct from factors that increase firms' demand for outside capital more generally.

Benninga, Helmantel and Sarig (2005) introduce a model where the entrepreneur at each point in time chooses between selling equity to well diversified outside investors and remaining private. The trade-off is between the higher valuations diversified outside investors are willing to pay from which the entrepreneur only benefits when the firm is public, and private benefits of control which he only enjoys when the company is private. *Ceteris paribus*, as long as the entrepreneur's private benefits exceed the cost of being under-diversified, he will choose to remain private. Outside investors' valuations vary over time as market conditions and the firm's cash flows and prospects change, and therefore, so does the case for going public.

Pastor and Veronesi (2005) also study the timing of IPOs, but emphasize the importance of changes in valuations as captured by returns rather than valuation levels. All else being equal, firms are more likely to go public following recent improvements in market conditions, regardless of the level of valuations in the market. Boehmer and Lundqvist (2004) also find that recent returns matter more than the level of market-to-book ratios, which supports this emphasis on changes than levels. Pastor and Veronesi (2005) further predict that more firms go public when uncertainty about their future profitability is high.

The existing literature on IPO timing focuses on the aggregate of time series behaviour of IPO volume. Lowry (2003) studies the time series of IPOs in the U.S., showing that the main determinants of fluctuations in IPO volume are changes in firms' demand for outside capital and proxies for investor sentiment. Helwege and Liang (2004) argue that firms going public in periods of high IPO volume do not differ in any key characteristic from those going public in low volume periods. Cook and Kieschnick (2004) using data on the incidence of going public and going private transactions in the U.S. from 1989 to 1992, document that IPO volume increases in

industry profitability, stock valuations and a measure of the value of control rights. Pastor and Veronesi (2005) find that ‘IPO Waves’ coincide with peaks in stock market returns, increases in aggregate profitability, positive revisions to analysts’ long-term earnings growth forecasts, and higher volatility.

B. The initial underpricing of Initial Public Offerings

The initial underpricing phenomenon of IPOs refers to the positive average abnormal return found over a short period of time after the issue. The initial abnormal returns are typically measured between the offering price and the closing price at the end of the first day or the first week after the IPO (5th trading day). Since the initial return period is very short, the returns are generally not adjusted by any benchmark⁴. The first major academic study reporting a positive mean initial return of IPOs is Ibbotson (1975). On a sample of 120 IPOs during 1965-69, he finds an average initial return of 11.4% from the date of issue to the end of the offering month. Most of the following studies measure initial returns during the first day of trading. Ibbotson and Jaffe (1975) report an average initial return of 16.8% using a much larger sample in a similar period. Ritter (1984) finds an initial return of 18.8% for a sample of 5,162 IPOs. A summary of the results from these and other studies can be found in Appendix A.

Additional studies documenting positive initial returns are Miller and Reilly (1987), Carter and Manaster (1990), Tinic (1988), and Ibbotson, Sindelar and Ritter (1988). The latter find a 16.4% average initial return for a sample of 8,668 IPOs during the period 1960-87⁵. The initial underpricing phenomenon is not limited to U.S. IPOs. Various studies on IPOs in different countries have confirmed that the positive initial return is found virtually in all markets, although the size of underpricing varies substantially from country to country. For example, Aggarwal, Leal and Hernandez (1993) report that IPOs in Brazil, Chile, and Mexico had average initial returns of 78.5%, 16.3%, and 33.0%, respectively. Dawson (1987) reports a 17.6% initial

⁴ Depending on market volatility

⁵ The study is being updated by Professor Ritter (<http://bear.warrington.ufl.edu/ritter/pbritter.htm>) and the latest finding is that over a period of 52 years (1960-2011) the underpricing of US IPO stocks stands at 16.8% i.e., much unchanged from the original result.

return for IPOs in Hong Kong, and Kim, Krinsky and Lee (1991) find an initial return of 79.0% for the Korean IPOs and Chan, Wang and Wei (2003) find an average initial return of 178% and 11.6% for Class A and Class B shares of Chinese IPOs respectively. Su and Fleisher (1999) find that Chinese IPOs of A-shares exhibit an ultra underpricing of 948.6%. A study by Huang and Levich (2003) shows that the initial returns for non-OECD countries average 65.9% while for OECD countries initial returns average 11.1%.

Among the European countries, initial returns ranging from 12.0% to 39% are found in Sweden, Switzerland, and the United Kingdom by several studies including Rydqvist (1993), Kunz and Aggarwal (1994) and Levis (1993). Schuster (2003), for a sample of 973 European IPOs offered between 1988 and 1998 in the six largest continental markets (Germany (219 companies), France (323), Italy (77), Netherlands (75), Spain (88), Sweden (148) and Switzerland (43)), finds considerable underpricing which is time varying and related to proxies of uncertainty such as age or sector. Specifically, the average initial return is found to be 16.52% and the median 7.14%. Gajewski and Gresse (2006) based on a sample of 2104 IPOs from 15 European countries between 1995-2004, find an average initial underpricing of 22%.

The evidence on IPOs for state-owned firms is consistent with that on privately-owned firms, also revealing underpricing (Jenkinson and Mayer, (1988), Perotti and Guney, (1993), Vickers and Yarrow, (1988)). Dewenter and Malatesta (1997) explicitly compare state-owned IPOs with privately-owned IPOs in eight countries including both well-developed capital markets (Canada, France, Japan, and the UK) and less- developed capital markets (Hungary, Malaysia, Poland, and Thailand) and do not find significant differences in the degree of underpricing between the two types of firms, except in the UK, where privatizations were more underpriced. They also find that underpricing tends to be higher in regulated industries, when compared with unregulated industries, before again confirming that underpricing is more severe in less developed capital markets.

A number of theoretical explanations for the puzzling result of IPO underpricing have been formulated. Many of them rely on the assumption of *information asymmetries*: that there are differences in information known by the various parties that are involved in an IPO; namely, the issuer, the underwriter, and the investor.

One of the most important explanations for the underpricing of IPOs is the adverse selection model presented by Rock (1986). Rock divides investors into two groups: the informed investors who will attempt to buy shares only when an issue is underpriced and the uninformed investors who will buy shares in all IPOs, whether the issue is underpriced or overpriced. As a result, when an issue is underpriced and thus subscribed by both types of investors, the uninformed investors will be allocated only a fraction of the issue. On the other hand, when an issue is overpriced, the uninformed investors will ‘win’ the entire issue. The partial allocation of the ‘bargain’ issues and the complete ‘winning’ of the ‘rip-off’ offerings produce a ‘winner’s curse’ problem. Recognizing this adverse selection problem, the uninformed⁶ investors are attracted to the IPO market only when they are compensated for their allocation bias problem in the form of the average underpricing of the issues. An implication of Rock’s model is that riskier issues should be underpriced to a greater extent. This finding is supported by Beatty and Ritter (1986) who extend Rock’s model by showing that the level of underpricing increases with the degree of *ex ante* uncertainty about the value of the firm. This implication is tested empirically, and the results confirm this relationship (Beatty and Zajac, (1994); Welbourne and Cyr (1999)). Firms with more uncertainty about growth opportunities, for example, on average have higher levels of underpricing than other firms (Ritter, (1984)). More recently, Loughran and McDonald (2013) argue that IPOs with high levels of uncertain text in their S-1 form in the first SEC filing, have higher first-day returns, absolute offer price revisions and subsequent volatility. Their findings support those of Beatty and Ritter (1986) *ex ante*

⁶ Leite (2007) demonstrates that the strict separation between informed and uninformed investors is not required. If there are plenty of heterogeneously informed investors, the winner’s curse occurs when the least informed investor willing to participate in the offering (the marginal investor) is allocated a disproportionately high fraction of overpriced issues relative to the rest of the participating investors who all are better-informed than the marginal investor.

uncertainty since more uncertainty about an IPO's valuation produces higher first-day returns.

While Rock (1986) considers an information asymmetry problem among investors, Baron and Holmstrom (1980) argue that it is the investment bankers who have superior knowledge about the issues compared to the issuing companies. They deliberately underprice the offerings expending less effort to market the new issues and to favour their buying clients. Although this argument may be conceivable, and is somewhat supported by the empirical findings in Baron (1982), Muscarella and Vetsuypens (1989) find that the investment banks underprice themselves by as much as other IPOs when they go public. If the investment bankers were, in fact, informational advantaged, one would not expect to find them underpricing their own shares at IPO.

Although the Rock model assumes a fixed pricing offer with pro-rata allocation rules, the model predicts lower underpricing if information is distributed more homogeneously across investors (Michaely and Shaw, (1994)). One solution is to switch to a different introduction method than fixed price offers. Benveniste and Spindt (1989) offer a dynamic information acquisition explanation for the underpricing phenomenon. In their model, IPO underpricing induces regular investors to reveal information about their valuations of the new issue during the preliminary prospectus stage. The revealed information is then used to determine the issue price. Empirical findings that support this argument are reported in Hanley (1993), Hanley and Wilhelm (1995), Cornelli and Goldreich (2001) and Aggarwal, Prabhala and Puri (2002). Benveniste and Wilhelm (1990) formalise this within the context of the winner's curse model and show that a pure bookbuilding method leads to less informational asymmetry, reduces the winner's curse, and consequently leads to lower underpricing.

Some theoretical models involved a signalling equilibrium where the issuers underprice the IPOs in order to charge a higher price in subsequent seasoned equity offerings (SEOs). In the signalling models developed by Allen and Faulhaber (1989), Grinblatt and Hwang (1989) and Welch (1989), high quality firms may underprice their IPOs in order to signal their high valuations. The reduction in IPO

proceeds would then be recovered in subsequent seasoned offerings (SEOs). Welch (1989) does find evidence that more IPO firms conduct a SEO within a few years after going public than an average firm. However, the signalling hypothesis is generally not supported in Jegadeesh, Weinstein and Welch (1993).

Although, Jegadeesh, Weinstein and Welch (1993) find some relation between IPO underpricing and favourable conditions for SEOs, underpricing is not the uniquely necessary factor for the favourable conditions. In particular, they find that the aftermarket returns can predict successful SEOs, concluding that the issuers need not rely on costly IPO underpricing to create better SEO conditions.

Behavioural theories of underpricing assume either the presence of ‘irrational’ investors who bid up the price of IPO shares beyond true value, or that issuers are subject to behavioural biases and therefore fail to put pressure on the underwriters to have underpricing reduced.

Welch (1992) argues that the IPO market is subject to information ‘cascades’. In his model, an investor’s demand for the issue not only depends on his/her valuation, but also on the demand by other investors. As a result, there may be a case where some investors who otherwise would subscribe for an issue may decide not to do so when they discover that the issue is not demanded strongly by other investors. In order to avoid this problem, issuing companies may underprice their offerings to attract the first few buyers, thereby inducing a positive ‘cascade’ effect in which all subsequent investors join their ‘instigators’.

An interesting implication of the informational cascades explanation in conjunction with Benveniste and Spindt’s model (1989) is that positively sloped demand curves can result. In Benveniste and Spindt’s model, the offering price is adjusted partially upwards if regular investors indicate positive information. Other investors, knowing that this will only be a partial adjustment, correctly infer that these offerings will be underpriced. These other investors will consequently want to purchase additional shares, resulting in a positively-sloped demand curve. The opposite is also true; because investors realise that a cut in the offering price indicates weak demand from other investors, cutting the offer price might actually scare away potential investors.

However, cascades are not inevitable. In bookbuilding, cascades do not develop because the underwriter can maintain secrecy over the development of demand in the IPO book. Therefore, less underpricing is required. Amihud, Hauser, and Kirsch (2003) analysis of demand and allocations in Israeli IPOs supports Welch's (1992) prediction that demand is either extremely low or there is oversubscription, with few cases in between.

A central tenet of behavioural choice holds that decisions are influenced by how choices are framed. Considerable evidence derived from controlled experiments supports these claims and suggests other systematic deviations from expected utility maximisation. These findings provide the foundation for Kahneman and Tversky's (1979) formulation of prospect theory. Prospect theory asserts that individuals make choices under uncertainty by maximising a value function that evaluates wealth changes, rather than an expected utility function that ranks choices according to the level of expected utility. The value function is positive and concave in the domain of positive changes and negative and convex in the domain of negative changes.

Loughran and Ritter (2002) assume that the decision-maker's initial valuation beliefs are reflected in the mean of the indicative price range reported in the issuing firm's IPO registration statement. This belief serves as a reference point against which the gain or loss from the outcome of the IPO can be assessed. The offer price for an IPO routinely differs from this reference point, either because the investment bank 'manipulated' the decision-maker's expectations by low-balling the price range, or in reflection of information revealed during marketing efforts directed at institutional investors. Empirically, offer prices appear to only partially adjust (Hanley (1993)) in the sense that large positive revisions from the reference point are associated with large initial price increases from the offer price during the first day of trading.

Decision-makers in IPO firms are further assumed to distinguish between losses associated with 'money left on the table' in the form of positive initial returns and the perceived gains or losses reflected in the difference between the first-day closing price and the mean of the indicative price range. Applied in the context of the prospect theory value function, this form of mental accounting (Thaler (1980) and (1985)) leads to gains and losses being valued separately (segregated) or jointly

(integrated), depending on which yields the highest net value. The convexity of the value function for negative wealth changes implies that decision makers will integrate two related losses. Concavity of the value function in the positive domain implies that two related gains will be segregated. Whether the combination of a loss and a gain will be integrated or segregated depends on their relative size. If the perceived gain exceeds the underpricing loss, the decision-maker is satisfied with the IPO underwriter's performance.

Ljungqvist and Wilhelm (2004) use the structure suggested by Loughran and Ritter's (2002) behavioural perspective to test whether the CEOs of IPO firms make subsequent decisions consistent with a behavioural measure of their perception of the IPO's outcome. Specifically, they investigate whether CEOs deemed 'satisfied' with underwriter's performance according to Loughran and Ritter's argument, are more likely to hire their IPO underwriters to lead-manage later seasoned equity offerings. Controlling for other known factors, IPO firms are less likely to switch underwriters for the secondary equity offerings when they are deemed 'satisfied' with the IPO underwriter's performance. Underwriters also appear to benefit from behavioural biases in the sense that they extract higher fees for subsequent transactions involving 'satisfied' decision-makers.

Although Loughran and Ritter's (2002) application of prospect theory can rationalise why IPOs with unexpectedly strong demand are underpriced more, they do not explain why issuers choose underwriters with a history of severe underpricing in the first place. As Ritter (2003a) argues, the presumably perceived importance of analyst coverage gives some prestigious underwriters the ability to attract issuers even though in the 1990s these underwriters underpriced offerings substantially (Rajan and Servaes (1997), Michaley and Womack (1999) and Bradley, Jordan, and Ritter (2003)).

Ljungqvist, Nanda and Singh (2006) attribute IPO anomalies to investor sentiment in the sense that a class of investors are at times irrationally exuberant about the prospects of IPOs. Stocks underperform in the long run when this enthusiasm fades. Kahneman, Slovic and Tversky (1982) argue that investors often predict future uncertain events by taking a short history of data. Barberis, Shleifer and Vishny

(1998) model such representativeness heuristics to develop a model for investor sentiment in which investors extrapolate past good performance into the future leading to overreaction. This naivety propels stock prices to unduly high levels, despite this is gradually corrected over longer horizons when past growth rates fail to repeat themselves. Chan (2013), using a sample of 2,444 IPOs that were completed in the US stock market over the period 1994-2004 finds that retail sentiment is positively related to the return volatility of IPOs on the first trading day. In particular, this is strongest over the internet period of 1999-2000. Moreover, he finds that over optimism amongst sentiment investors during the bubble period results in a negative relation between retail demand and long-run post-IPO price performance. Derrien (2005) finds that retail investors' book-building demand in France is positively related with first-day return and negatively related with 18-month post-IPO abnormal returns. Dorn (2009) shows that IPOs that are aggressively bought by retail investors in the German pre-IPO market are associated with high first-day returns and poor 6-month post-IPO abnormal returns. Cornelly et al (2006) using data from pre-IPO market for a large sample of European IPOs find that when the pre-IPO market price is high (implying that retail investors are optimistic) the aftermarket price is positively related and the long-run price performance is negatively related with the pre-IPO market price. Bradley et al (2009), studying US IPOs over the period 1993 to 2003 find that a strong positive relation exists between the proportion of retail trades and open-to-close returns on the first trading day. Finally, McGuinness (2009) finds that retail sentiment in Hong Kong IPOs is positively related to the first day return.

Recently, a growing body of literature has focused on the impact of cultural differences on financial measures. Within this research stream, Costa et al. (2013) examine whether Hofstede's (1980) cultural factors can help explain the large cross-sectional variation in global IPO underpricing. They find a significant relationship between initial IPO underpricing and several cultural dimensions defined by Hofstede. Griblatt and Keloharju (2001) examine the impact of distance, language, portfolio and culture on portfolio holdings. They conclude that investors prefer nearby firms, same-language firms and same culture firms. Kwok and Tadesss (2006) as well as Aggarwal and Goodell (2009) show that culture influences the formation of a country's predominant financial system. In particular, they find

countries are more likely to have bank-based financial systems where the culture is characterised by greater degrees of uncertainty avoidance.

C. The ‘Hot Issue’ market phenomenon

Over the past 40 to 50 years, a recurring pattern of cycles in both the volumes and the average initial returns of IPOs has been observed. This pattern is referred to as the ‘hot issue’ market phenomenon. The ‘hot issue’ markets, which are the periods with unusually high initial returns, are found to be associated with increasing volume of IPOs. On the other hand, the ‘cold issue’ markets, with relatively low initial returns, tend to occur toward the end of the high IPO volume periods. Ibbotson and Jaffe (1975) first documented the pattern for the 1960-70 periods. Ritter (1984) confirmed the persistence of the pattern for the 1960-82 period. He finds an unusually high 48.4% average initial return during the ‘hot issue’ market in 1980-1981 while reports a relatively low figure of 16.3% for the ‘cold issue’ market in the remaining 1977-82 period.

Ibbotson, Sindelar and Ritter (1988) extended the sample period to 1960-1987 and reconfirmed the phenomenon. They also found a clear relationship between the average initial return and the number of offerings: severe underpricing of IPOs appears to lead heavy volume periods of new offerings by approximately six to twelve months. Market climate not only affects the number of successful offerings, but also the amount and the variability of IPO underpricing. Kooli and Suret (2002) report that when the market is ‘hot’, the level of underpricing may double or even triplicate. If market is ‘cold’, then the level of underpricing would be much lower.

Lowry and Schwert (2002) find a high level of autocorrelation of monthly average first-day returns between 1960 and 1997, which increased during the Internet boom in the late 1990s. They confirm a significant positive relation between initial returns and future IPO volume and note that, “...increased numbers of companies go public after observing that IPOs are being underpriced by the greatest amount”. They associate the cycles in initial returns with the investment bankers’ learning process. Because the registration periods of many IPOs overlap, the information that underwriters learn during one firm’s registration period will contribute to the first-

day returns of many IPOs. Also Hoffman-Buchardi (2001) find that the IPO market is subject to dramatic swings. They report that the price of one firm serves as a feedback mechanism to other IPOs since it can reveal information about certain common value factors about the prospects of a specific industry and therefore change the value of other firms.

The prospect theory explanation of the partial adjustment phenomenon (Loughran and Ritter (2002)) addresses the phenomenon of ‘hot issue’ markets in a similar fashion. It predicts that all IPOs that are in the ‘road show’ stage of going public when there is an overall market rally, will have higher expected underpricing because offer prices are not raised as much as they could be. Because of the length of the bookbuilding period, which can take from four weeks to four months, the first day returns of these IPOs will be correlated.

Shiller’s (1990) ‘impresario’ hypothesis can also explain the positive autocorrelation in IPO activity and initial returns reported in the literature. Hot markets appear when underwriters exploit a segment thought to be ripe for a ‘fad’. Even though many investors may be unwilling to follow a ‘fad’, they may find it profitable to follow positive feedback investment strategies (Rajan and Servaes (1993)). Acting this way, they may actually have caused the positive autocorrelation themselves.

In the more general setting of ‘fads’ described by Aggarwal and Rivoli (1990), fads occur in hot issue periods when investors are especially overoptimistic about the growth potential of the firms that go public, induced by the ‘Impresario’, the investment bank taking the company public. Firms time their IPOs in precisely these periods in order to take advantage of ‘windows of opportunity’ (Market Timing Hypothesis). It follows that hot markets for IPOs should be concentrated in certain industry classes, dominated by specific underwriters and that IPO activity should come from those companies for which issuing equity is always the least favoured choice of financing. Moreover, companies with the largest initial returns should have the lowest subsequent aftermarket returns. Pagano et al. (1998) find that while IPOs cluster following high industry valuations, investment and profitability of IPO firms decrease after their issues. Similarly, Alti (2006) finds that while hot IPO

firms issue substantially more equity than cold IPO firms, they do not invest more ex post.

There have been few theoretical explanations for the ‘hot issue’ market phenomenon. Based on the argument that riskier issues tend to be underpriced to a greater extent, Ritter (1984) offers a hypothesis that the periods where more risky firms go public may have higher initial returns. Ritter (1984), using Rock’s model (1982) argues that riskier firms are difficult to value and as such, uninformed investors will be more uncertain of the aftermarket price. Hence, riskier firms will have higher average initial returns. This hypothesis, based on the ‘changing risk composition’ of the IPO market, is not strongly supported by data. Ritter (1984) finds that although there is some evidence that the ‘hot issue’ markets are associated with riskier offerings, the factor of changing risk composition explains only a little fraction of the amplitude in the average initial return cycles. He finds that the hot issue phenomenon appears only for natural resource issues and is not clearly visible for non-natural resource IPOs. In general, Ritter (1984) claims that the hot issue phenomenon may be a result of firms from high-risk industries entering the market, thereby leading to higher initial returns.

More recently, Yung et al. (2008) argue that the key features of ‘hot’ IPO markets follow from time variation in adverse selection. In particular, they maintain that exogenous shocks to investment opportunities cause time-varying adverse selection in the IPO market. Positive shocks lead to more firms going public since an increase in capital productivity leads to greater demand for capital and hence more activity in IPO markets. Their model predicts two main testable implications. First, that cross-sectional variance in long-run returns is much higher for firms that issue during hot markets. Secondly, IPOs issued during ‘hot’ markets are more likely to delist than those in cold markets.

D. The long-run (under)performance of Initial Public Offerings

The study of the long-run performance of IPOs is important for several reasons. First, as Ritter (1991) asserts, the existence of long-run systematic price patterns raises questions concerning aftermarket efficiency. Second, from an investor’s perspective,

if the long-run underperformance anomaly exists, active trading strategies may take place. In other words, investors fortunate enough to be allocated shares at the IPO should sell them almost immediately as the trading is started. Third, there is considerable variation in the measures of abnormal returns and the statistical tests that empirical researchers employ to detect long-run abnormal stock returns.

Using a sample of 1,526 IPOs that went public in the U.S. during 1975-84, Ritter (1991) finds that after 3 years of going public, these firms significantly underperformed market indices and a set of comparable firms matched by industry and size. Excluding an average initial return of 14.32% as measured from the offering price to the market price at the end of the first day of public trading, the IPOs in his sample produced an average 3-year holding period return of 34.37%. However, a control sample of matching firms, paired by industry and market value, produced an average total return of 61.86% during the same 3-year holding period.

The long-run underperformance of IPOs is found to continue after the three-year period examined by Ritter (1991). Yi (1992), using the same IPO sample as in Ritter, finds that the underperformance continues until six years after going public. Loughran and Ritter (1995) use a larger sample of IPOs (4,753 issues between 1970 and 1990) and find that the poor stock performance extends to five years after issue, with no further underperformance in the sixth year.

Various studies with international data generally suggest that the long-run underperformance of IPOs is a global phenomenon although there are several studies that concluded the opposite thus making the issue of long run performance disputable (see Appendix B). Lee, Taylor and Walter (1996) report a three-year abnormal return of -46.5% for Australian IPOs during 1976-89 period. Aggarwal, Leal and Hernandez (1993) find that the IPOs in Brazil and Chile underperformed a benchmark by 47% and 24%, respectively, by the end of three years after issue. Kiyamaz (2000) finds a positive long-term (over) performance of IPOs in the Istanbul Stock Exchange of 44.1%.

Before these empirical studies were conducted, two theories that 'predicted' the long-run underperformance of IPOs were advanced. Miller (1977) asserts under

certain conditions (no short selling) that in an IPO, the main buyers are the investors that are most optimistic about future prospects of the IPO firm. Due to uncertainty about the valuation of an IPO, there will be a range of different valuations given by the optimistic and pessimistic investors. Since the shares will tend to be purchased by the optimistic investors, the offering price will be higher than the 'fair' price. As time passes on and more information becomes available, the stock price will approach (will decrease to) the 'fair' price. Thus, Miller (1977) predicts that IPOs, especially the riskier issues, will underperform in the long run.

Shiller (1990) provides another explanation for the poor long-run performance of IPOs. He argues that the IPO market is subject to fads and that investment banks act as the 'impresarios' promoting the issue. One way to attract investors would be to underprice the new issues. As with Miller's model, Shiller's 'impresario' hypothesis predicts that IPOs will underperform in the long run. In particular, the size of underperformance is expected to be related, positively, to the size of underpricing. Although Ritter (1991) finds some evidence for this relation, results in Yi (2001) suggest that the initial return is generally not a significant factor in explaining the long-run returns.

The focus of the empirical studies discussed in the previous section has mainly been on the average long-run performance of IPOs. In an effort to shed some light on the puzzling finding with further empirical studies, some researchers have started to examine possible factors that may affect the cross-sectional variation in IPO long-run returns. Ritter (1991) reports that younger firms and firms that went public in the high volume years of the early 1980s had the most serious underperformance. He finds that older firms going public in light-volume years of mid- to late 1970s had performed as well as the benchmark. Teoh, Wong and Rao (1995) find that IPO firms that had high discretionary accounting accruals were associated with the largest negative abnormal stock returns. Brav and Gompers (1997) find that venture capital-backed IPOs outperform non-venture capital-backed IPOs when returns are computed on an equal-weighted basis. They also find that the difference in returns is largely due to severe underperformance of small firms.

There have been several studies that examined the reputation of the lead underwriter as a significant factor in explaining the long-run returns of IPOs. Carter, Dark and Singh (1998) report that the IPOs underwritten by the investment banks with the highest reputation do not underperform the NASDAQ index while those underwritten by less prestigious underwriters severely underperform the index during the first three years after issue. Furthermore, Beatty and Vetsuypens (1995) find evidence that the investment banks are penalized for underwriting IPOs that had poor long-run performance.

Another factor that seems to be significantly related to the long-run performance of IPOs is the earnings before going public as evidenced in Yi (2001). Consistent with Ritter's (1991) results, Yi finds that IPOs as a whole underperformed a market index and control firms over a three-year period after going public. However, the IPO firms that had positive earnings per share (EPS) at the time of offering seem to have fared better than the firms that went public with negative EPS. As a concluding remark, based on the broad empirical findings discussed above, especially the high initial return and poor long-run performance of IPOs, one can argue that investors may have been too optimistic about future prospects of these new public firms. That is, the disappointing long-run returns are only the rational and inevitable results of the rather irrational run-up in prices in the initial period. This is further supported by Ljungqvist, Nanda and Singh (2006) who attribute long-run underperformance of IPOs to the presence of a class of irrationally exuberant investors. Stocks eventually underperform in the long-run when the exuberance dies away.

Khurshed et al (1999) propose that the long-run performance of IPOs is a function of pre-IPO factors, including managerial decisions and the firm's performance prior to going public.

In addition to the above, the academic literature also focuses on other aspects such as mechanism design, the compensation of investment bankers, stabilisation activities, and the variation of IPO volume across countries.

E. Differences across countries in the IPO market

i. Market activity across countries

The volume of IPOs varies substantially from country to country. La Porta, Lopes-de-Silanes, Shleifer and Vishny (1997) report that the number of IPOs varies systematically across countries, with countries having a legal system based upon British common law having more IPOs. Pagano, Panetta and Zingales (1998) report that market-to-book ratio is the single most important determinant of the decision to go public for Italian firms. Subrahmanyam and Titman (1999) argue that the ease of going public depends upon the costs of acquiring information in an economy. They argue that each publicly traded firm creates a positive externality by making it easier to value comparable firms. Holmen and Högfeldt (2003) show that in Sweden, firms typically issue shares with inferior voting rights in the IPO, and if the shares with superior voting rights are eventually sold, they are always sold as a block.

ii. Composition and institutional differences

According to Ritter (2003b), before the 1990s firms going public in Europe, especially continental Europe, tended to be much older (median 28 years) than those going public in the U.S. (median age 7 years). Even with the Internet boom (1999-2000), the age of an IPO in Europe is still high (median of 13 years in a sample of 1007 European IPOs from 1995 to 2001) compared to the U.S. (median of seven years for a sample of 2,178 IPOs during 1996-2000). Schuster (2003) points out that European IPOs are more likely to include secondary shares (shares being sold by existing shareholders) in the offering than is true for U.S. IPOs. In the 1980s and the early 1990s, 67 per cent of Portugal's and 23 per cent of Germany's floatations involved only shares sold by insiders. By contrast, virtually all American IPOs involve at least some primary equity, and usually around half sell solely new shares. Europe is showing similar signs. Since 1995, 82 per cent of IPOs in Europe outside the UK have raised new capital and secondary-only IPOs have virtually disappeared in Germany.

As Ritter (2003b) points out, in the late 1990s, several changes were taking place in the worldwide IPO market. For example, the industry sector became more important, irrespective of the country of headquarters e.g., Internet sector. Another change was that the new exchanges (e.g., Germany's Neur Markt, Italy's Nuovo Mercato, the Netherlands Nieuwe Markt, Belgium's Euro.NM, Belgium and France's Nouveau Marché) changed the focus on listing requirements from accounting criteria such as profitability and assets to corporate governance and disclosure requirements.

F. Alternative mechanisms for pricing and allocating securities

Loughran, Ritter and Rydqvist (1994) and Chowdhry and Sherman (1996a) document that the average first-day return varies systematically with the mechanism used to price and distribute IPOs. The highest average first-day returns come in countries where government regulators impose formulas based on accounting information for setting the offer price, although the frequency of these constraints is declining. In general, the mechanisms used for pricing and allocating IPOs can be categorised as auctions, fixed-price offers and book-building. Although different prices are sometimes paid by different investors—sometimes individual investors pay less than institutional investors,—uniform price mechanisms in which every investor pays the same price are most common.

In auctions, a market-clearing, or slightly below market-clearing price is set after bids are submitted. Since there is little if any excess demand at the offer price, in general shares are allocated to all successful bidders. Auctions have been used in many countries including France, Israel, Japan and Taiwan and the USA for pricing and allocating IPOs.

A fixed price offer has the offer price set prior to requests for shares being submitted. If there is excess demand, shares are typically rationed on a pro rata or lottery basis, although frequently requests for large numbers of shares are cut back more than requests for moderate numbers. In other words, if there is discrimination in the allocation of shares, it is normally done solely on the basis of order size. Thus, there is no way for the underwriter to reward investors who provide information. In many countries with a fixed-price offer, investors must submit the money to purchase the

requested shares, without knowing whether they will receive many shares. Ritter (2003) cites the example of tom-com, an IPO in Hong Kong in February 2000 that was oversubscribed by 669 times and Chowdhry and Sherman (1996a) who cite the example of Denway Investment in Hong Kong, which was oversubscribed 657 times in 1993.

As Ritter (2003), Loughran, Ritter and Rydqvist (1994), and Chowdhry and Sherman (1996a) acknowledge, in general, the longer the time that elapses between when a fixed-price offer is set and trading begins, the higher is the average first-day return (i.e., underpricing). Partly this is because the longer the time until completion the higher is the probability that market conditions will deteriorate and the offering will fail. To reduce the probability of a failed offering, a lower price is set. Conditional on the offer succeeding, the expected underpricing is relatively high. Chowdhry and Sherman (1996a) cite another reason why there is an incentive to underprice IPOs even more (in countries where the full amount has to be paid with the application in advance for all the shares bid for). They argue that the interest earned on the subscription funds decreases the cost of underpricing since the issuer earns a substantial amount of money on the money deposited by potential investors in the bidding account thus a large part of the underpricing will be recouped in the form of interest revenues on the float.

Levis (1990) also points out, that in the U.K., investors have to pay for the whole amount of their application at least seven days prior to the first day of trading, and they may end up receiving just a fraction of the shares, which they applied for. Levis argues that within this framework, investors will not apply for a new issue unless they expect that the total potential gains on the new issue at least cover the total interest cost. In other words, the underpricing of the new issue has also had to be sufficiently large to cover the possibility of accelerated interest rate cost per share received in case of oversubscription.

Book-building – which is also known as firm commitment in the USA – is a mechanism in which underwriters canvas potential buyers and then set an offer price. A key feature of book-building is that the underwriter has complete discretion in allocating shares. As part of the marketing campaign, a road show is usually

conducted to stimulate demand for the company's shares. After stimulating demand, underwriters then try to set an offer price at which there is excess demand and allocate the securities to investors based on various criteria such as allocating shares to buy-and-hold investors and regular investors who were willing to buy shares when demand was weak. This complete discretion allowed by book-building seems to have side effects. Ritter and Xiaoding (2010) argue that the practice of spinning⁷ affects IPO underpricing. Specifically, he finds that IPOs in which the executives are being spun are underpriced about 23% more than other IPOs.

In general, auctions have been associated with low, but positive, average first-day returns. These first-day returns are generally lower than when fixed-price offers or bookbuilding is used.

As Ritter (2003b) points out, there has been a decline of fixed-price mechanisms and auctions selling IPOs in Europe and simultaneously a growth in bookbuilding. Fixed price offerings have become uncommon in recent years. Jagannathan and Sherman (2006) analyse the use of different IPO pricing mechanisms in various countries and find that amongst countries that formerly used IPO auctions virtually all have abandoned the method. They argue that uniform and discriminatory auctions suffer from large fluctuations in the number of auction participants. Moreover, the free rider problem and the Winner's Curse make price discovery more difficult. As a consequence, this might contribute to inaccurate pricing. In addition, fees do not differ substantially between the different methods.

France is possibly the only market in the world that a multitude of pricing mechanisms exists. Even so, the fixed price and auction mechanisms have declined in France as well as, DeGeorge, Derrien and Womack (2004) argue. In Europe, when bookbuilding is employed, the price range, once set, does not change above the

⁷ According to Ritter and Xiaoding (2010), *Spinning is the allocation by underwriters of the shares of hot initial public offerings (IPOs) to company executives in order to influence their decisions in the hiring of investment bankers and/or the pricing of their own company's IPO. The term 'spinning' refers to the fact that the shares are often immediately sold in the aftermarket, or 'spun', for a quick profit, and an IPO is termed 'hot' if it is expected to jump in price as soon as it starts trading.*

maximum in contrast to the USA, where the price range can change even during the pricing meeting, a few hours before trading commences.

Insert Table 1 – Average initial returns by selling mechanism

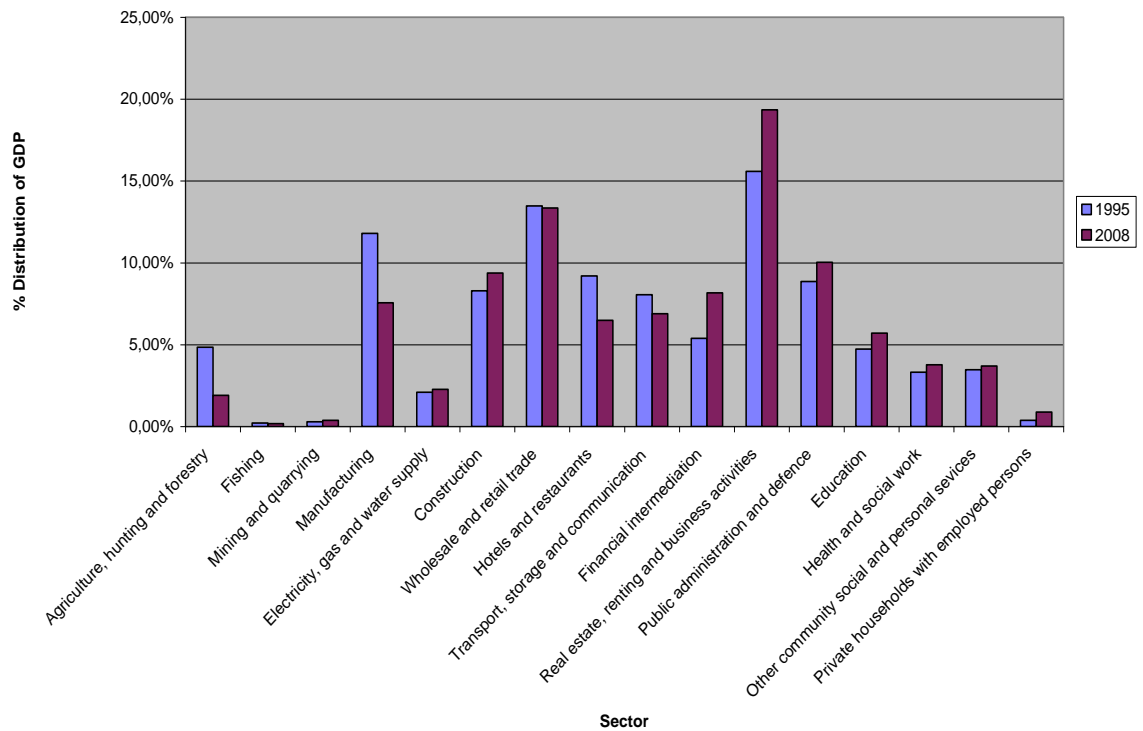
Biais and Faugeron (2002), Sherman (2004) and Ljungqvist (2005) argue that book-building is a superior mechanism for selling IPOs relative to auctions. Their argument is that book-building can be viewed as a dynamic auction conducted by underwriters, with the advantage that underwriters can use their discretion in allocating shares to reward regular investors who provide reliable information about valuation to the underwriters. This reduces the risk for both issuers and investors and controls spending on information acquisition thereby limiting either underpricing or aftermarket volatility. DeGeorge, Derrien and Womack (2004) also argue that the book-building approach is dominating auctions because of advertising-related quid pro quo benefits. Analysing the French market, they find that book-built issues were more likely to be followed and positively recommended by the lead underwriters and were more likely to receive ‘booster shots’ post issuance if the price of the shares had fallen. However, as Ritter (2003) points out, the above researchers do not discuss the trade-off with agency problems between underwriters and issuers.

III. The Cyprus economy

A. A brief introduction

The economy of the Republic of Cyprus is a relatively novice one. It counts 53 years of life (independence from Great Britain came in August 1960) and its structure has changed dramatically since the Turkish invasion in 1974 and the subsequent division of the island. In the 1960s, it was heavily dependent on agriculture, which accounted for more than a one-third of GDP. In the 1970s, and until the mid-1980s, manufacturing was the engine of growth, before it was replaced from the late 1980s onwards by services, which accounted for 78 per cent of gross value added in 2008. Tourism has been the driving force in this development, however, its contribution to the economy has declined the last 15 years (from 9.2 per cent in 1995 to 6.5 per cent of gross value added in 2008). The public sector comprises a hefty 18.7 per cent of GDP in 2008.

Fig 1 – Comparison of GDP by economic activity 1995 vs. 2008

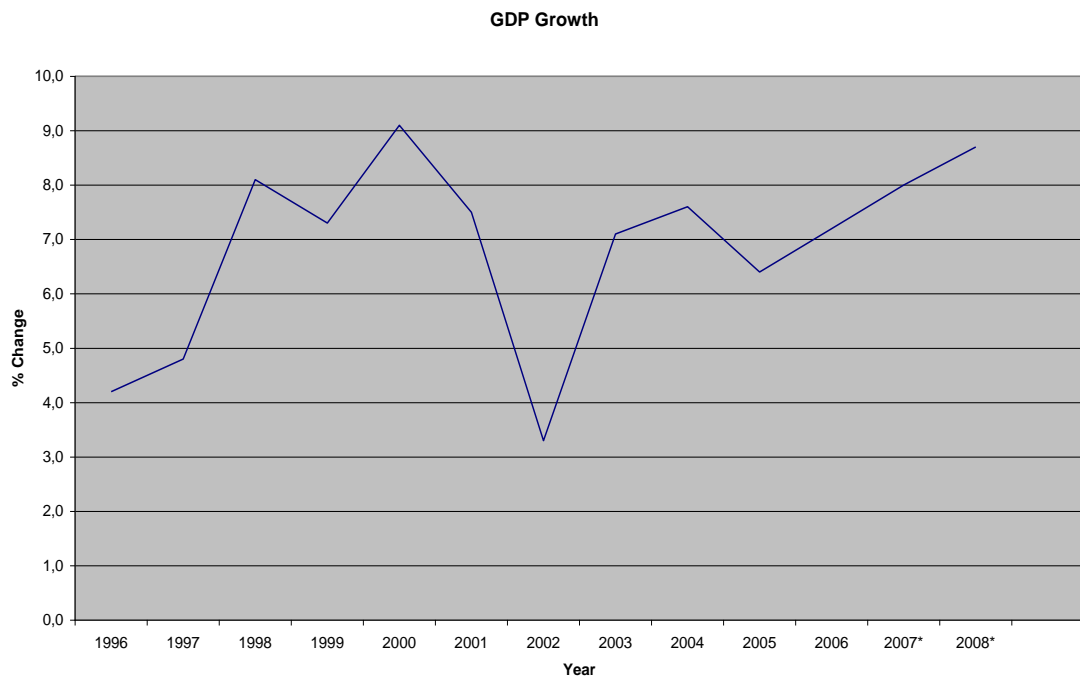


Source: CyStat

As one can clearly observe, the Cypriot economy has been transformed over a period of 15 years into mainly a service-based economy with the primary sector almost non-existent and the Real Estate having become the largest contributor to GDP (from 15.6% in 1995 to 19.3% in 2008).

Following a classical pattern, growth rates have gradually begun to decline as the Cypriot economy was maturing over the years. The average rate of growth had gone from 6.1% in the 1980s, to 4.4% in the 1990s to 3.4% from 2000 to 2004. In 2004, growth picked up to 3.7%, from 2.0% in 2003. Unemployment has been fairly constant at 3.6% in 2004, while inflation declined to 2.3% in 2004 from 4.1% the year before. As in recent years, the services sectors, and tourism in particular, provided the main impetus for growth with assistance from the Construction sector especially the last five years.

Fig 2 – Cyprus GDP growth 1995-2008



Source: CyStat

Cyprus is classified amongst the high-income countries, with a per capita income of CY£9,841 (Euro 16,785) in 2004⁸. It has a standard of living that is even higher than

⁸ Using the official exchange rate of CY£0.585274 per Euro.

some of the former 15 European Union member-states and the performance of the economy compares favourably with that of most 27 EU countries (80% of the 27 EU countries average). The Heritage Foundation⁹ ranks Cyprus 24th in the world ('mostly free'¹⁰) based on its index of financial freedom and 12th out of 43 countries in the European region, with its overall score being higher than the regional and global averages.

These achievements appear all the more striking, bearing in mind the severe economic and social dislocation created by the Turkish invasion of 1974 and the continuing occupation of the northern part of the island by Turkey¹¹.

The success of Cyprus in the economic sphere is attributed, inter-alia, to the adoption of a market oriented economic system, the pursuance of sound macroeconomic policies as well as the existence of a dynamic and flexible entrepreneurial culture and a highly educated labour force. Moreover, the economy benefited from the close cooperation between the public sector and the social partners.

During the last decade, Cyprus has intensified its relations with the European Union, its largest trading partner and the culmination of these efforts was that on May 1st 2004, Cyprus became a full member of the EU. On the 1st of January 2008, Cyprus became a member of the Eurozone.

Insert Table 2 – Cyprus economic indicators

The Cypriot economy demonstrates low levels of capital markets intermediation, with a strong, highly concentrated banking system and subsequently, high entry

⁹ A US-based think tank

¹⁰ Only 7 countries in the world are considered 'free' while the majority are considered as 'mostly unfree' and 'repressed'.

¹¹ The Turkish invasion inflicted a serious blow to the Cyprus economy and in particular to agriculture, tourism, mining and quarrying: 70 per cent of the island's rich producing resources were lost, the tourist industry lost 65 per cent of its hotels and tourist accommodation, the industrial sector lost 46 per cent, and mining and quarrying lost 56 per cent of production. The loss of the port of Famagusta, which handled 83 per cent of the general cargo, and the closure of the Nicosia International Airport (the only airport in Cyprus before 1974), in the buffer zone, were additional blows.

barriers. In addition to the 10 commercial banks that operate in the island, there is also a strong, but unsophisticated Co-operative movement¹², which currently is not supervised by the Central Bank of Cyprus. The three largest local banks (Bank of Cyprus, Cyprus Popular Bank¹³, and Hellenic Bank) account for some 60 per cent of the total deposits and 52 per cent of total lending (incl. foreign exchange lending).

The period 1996-2004 is one of unprecedented economic changes and restructuring with significant swings in investor psychology. As a prelude to the country's entry into the European Union, the economy was slowly liberalised, interest rates were gradually allowed to float, capital flows restrictions were progressively lifted, non-residents were allowed to hold up to 100% of Cypriot assets and Cypriots were free to invest abroad¹⁴. In March 1996, the Cyprus Stock Exchange was inaugurated and the Cyprus capital market was formalised. Added to these, the role of Cyprus as an offshore haven was challenged by EU entry, risking the loss of a sizable chunk of income for the state and the private sector services.

On the political side, 1996-2004 was a rather volatile period with ethnic clashes taking place (August 1996), tension with Turkey over a Russian mid-range ground missile system order (January 1997), and its subsequent deployment cancellation (December 1998), the start of EU accession negotiations (July 1999), the start of bi-communal talks under the auspices of the United Nations (2000). The culmination of the latter was the submission by the United Nations of a comprehensive plan for the settlement of the Cyprus problem submitted in November 2002 (called the Anan Plan). The plan was taken to a referendum in April 2004, overwhelmingly rejected by the Greek-Cypriot community (76%) and on May, 1st 2004, the Republic of Cyprus joined the European Union.

¹² *The Co-operative movement has a 29.53 per cent market share in total lending (including forex) and approx. 22% of total deposits (2008 figures).*

¹³ *Cyprus Popular Bank Public Co Ltd has been put into resolution since the 26th of March 2013.*

¹⁴ *Henry, P.B. (2000) argues that on average, a country's aggregate equity price index experiences abnormal returns of 3.3% per month in real dollar terms during an eight-month window leaping up to the implementation of its initial stock market liberalisation. The same author (2000) argues that stock market liberalisations lead private investment booms by lowering the cost of equity capital. However, the success of the liberalisation effort depends on whether foreign investors believe that the regulatory reforms will be long lasting (Bekaert and Harvey (2003a)).*

As Sapienza et al. (1996) point out, there is a range of economic, legal, institutional and cultural differences influencing the environment in which corporate financing takes place. One could argue that, the period 1996-2004 is possibly the one with the greatest influences in the Cypriot economic and societal fabric since 1974.

B. Tax incentives

Along with the inauguration of the Cyprus Stock Exchange, the government encouraged the listing of companies in the CSE and investors to hold shares of those companies by introducing tax incentives. In 1997, through Law 81 (I), tax incentives were extended as follows¹⁵:

Dividends received by individuals from shares listed in the CSE were tax-exempt up to CY£1,200 per year (approx. Euro 2000). In addition, 30% of the amount spent for the purchase of shares through an IPO (or the value of the holding of the existing shareholders) was tax deductible provided that listed shares represented at least 80% of the company's voting share capital, the shares are listed in the CSE within 3 months from the issue date and the shareholder maintains possession of the shares for at least 12 months from the issue date. In addition to the above, there was no capital gains tax on gains arising from the sale of equity investments.

For prospective issuers, the regime was equally attractive. Companies that performed an IPO on the CSE were taxed for the four years following the IPO year with a 50% reduced corporate tax coefficient. For profits up to CY£40,000 (approx. €68,344), 10% instead of 20% and for profits over CY£40,000, 12.5% instead of 25% provided that the shares were listed in the CSE within four years from the 10th of July 1998 and they represented at least 80% of the voting share capital of the company.

¹⁵ *The Portuguese IPO phenomenon of 1986 and 1987 may be explained by a double 'window of opportunity' resulting both from strong tax incentives, introduced by the new majority Government elected in 1985, for firms to offer and list their shares, and also from excessive market demand driven by the investor sentiment that soon followed. A specific tax benefit, introduced in June 1986, allowed a 50% deduction in the tax on profits in the 3 years following an offering and listing of at least 25% of shares. The tax deduction was reduced in the next 2 years to 40% and 25%, for the offerings filed in the years 1987 and 1988. The number of listed firms rose from about 20 in 1983 to around 150 in 1987 (Borges, M.R., 2007).*

Other institutional changes that assisted the investment climate were the fact that the maximum permissible percentage that Insurance companies could invest in equities increased from 20% to 30%.

An important ramification of the creation of the Cyprus Stock Exchange was the fact that the shareholders of companies that were listed on the CSE were exempted from capital gains tax. This was particularly important for companies that had substantial assets in real estate and family businesses. As generations go by, the number of shareholders in a family business increases, and their ties to each other and to the company loosen. The fragmentation of the ownership increases the probability that a family shareholder wants or needs to sell or to exchange shares. The valuation of the shares often creates hassle; if a company is listed, however, its shares are negotiable at any given moment on an open and free market where the prices are public and official. Therefore, being able to monetize one's holdings without capital gains tax (which stands at 20%) constitutes a significant motive for listing a company.

Hearn (2011) in a study of 63 IPOs over the period 2000-2009 in North Africa (Algeria, Egypt, Tunisia and Morocco) finds evidence supporting increased participation of family members at board level while contrastingly the wider dispersion of family ownership facilitates monitoring and surveillance and mitigates underpricing.

One could argue that all the incentives were in place for the Cyprus Stock Exchange to increase its listed members through an enhanced equity culture and targeted incentives.

IV. The Cyprus Stock Exchange

A. History and background information

The capital market in Cyprus has a history of thirty four years, a relatively short life span compared to other European or U.S. bourses. The initiative to establish an organised securities market was taken up by the Cyprus Chamber of Commerce and Industry (CCCI) in 1979¹⁶.

The unofficial over-the-counter market was operating under a set of unofficial regulations that were drafted by the CCCI in co-operation with the scant brokers and the few listed public companies. Trading was mostly carried out over the phone while stock exchange-like meetings, under the auspices of the CCCI were taking place three times a week and were followed, at least initially, voluntarily. The CCCI also provided a place where transactions were executed and the transactions were manually carried out. In these auction-type meetings, all brokers convened to arrive at a single market price for traded securities (there were neither specialists nor official market makers).

Typically, these market prices set at each centralised meeting served as benchmarks for market price levels until the next such meeting. However, the absence of a continuous, high-volume auction market and of a regulated competitive environment

¹⁶ *The Cyprus Chamber of Commerce and Industry is a private corporate body functioning under special law and is financially independent, free of any influence by the state. The Chamber is funded by its members' subscription fees and through income generated from a number of services it provides. The CCCI is the union of Cypriot businessmen, the interests of whom it promotes by submitting to the government and the Parliament the members' positions on matters in which they are involved, while, through its participation in tripartite bodies and committees, it conveys and promotes the views of the business community. The Cyprus Chamber of Commerce and Industry was founded in 1927 and in 1963, a new structure was adopted, which remains in operation to date, under the name of: 'Cyprus Chamber of Commerce and Industry'. The CCCI is the federation of the local Chambers of Commerce and Industry (CCIs) which operate in Nicosia, Limassol, Famagusta, Larnaca and Paphos. The local CCIs have a geographical coverage of their respective districts. The Nicosia CCI covers also the districts of occupied Kyrenia and Morphou. The membership of the CCCI exceeds 8,000 enterprises from the whole spectrum of business activity. Affiliated to it are more than 140 Professional Associations from the trade, industry and services sectors.*

left open the possibility that quoted prices might deviate from the underlying fundamental value for many securities. Rumours, manipulations by certain traders, overreaction by mainly unsophisticated investors and a herd-like mentality, may have exacerbated momentum trading strategies and resulted in positive autocorrelation in stock market prices, especially in the early period. Despite substantial inefficiencies in the market in the earlier period, taking advantage of arbitrage opportunities was limited by relatively high transaction costs (commission fees in excess of 1 per cent each way) and limits on short selling. A spot settlement system was employed.

The Cypriot capital market started to develop gradually due to the expansion of a few public companies, notably the three main banks (Bank of Cyprus, Cyprus Popular Bank¹⁷ and Hellenic Bank), and the establishment of new ones as well as the establishment of organised brokerage firms. The expansion of the Cyprus economy in accordance with the increase of per capita income together with the improvement of all economic indicators, also contributed towards the formalisation of the securities market. Thus, a more active market for securities was developing in the early 1990s. Parallel to the increase in the frequency of auction-type meetings, the number of brokerage firms also increased substantially.

The biggest players were financial services companies/brokerage houses of the three major banks (namely, CISCO, owned by Bank of Cyprus, Laiki Investments, owned by Cyprus Popular Bank and Hellenic Bank (Investments), owned by Hellenic Bank) and some individual brokers who entered early on¹⁸. A large increase in the daily price variance was observed in the early 1990s as compared to the late 1980s, consistent with a substantial improvement in market efficiency.

¹⁷ *Ex Marfin Popular Bank. Cyprus Popular Bank Public Co Ltd is currently under resolution following the events of March 2013 and the subsequent Eurogroup decisions which almost led to the collapse of the Cypriot Banking Sector.*

¹⁸ *In the Cypriot capital markets there are no investment banks in the true meaning of the word i.e., institutions that finance themselves predominantly from the securities markets and not by taking deposits. The companies that existed were mainly brokers, with limited balance sheet capabilities and the only companies that had the 'muscle' to underwrite securities in a mass scale were the subsidiaries of the main high street banks.*

The basis for the development and establishing of the regulated securities market was set by the “*Law for the development of the securities market in Cyprus and for the establishment and operation of the Cyprus Stock Exchange (CSE)*”, that was approved by the House of Representatives in April 1993. In July 1995, the Cypriot House of Representatives passed the regulations for the stock exchange function and supervision. The Cyprus Stock Exchange came into life on the 29th of March 1996, by virtue of the Cyprus Stock Exchange Laws and Regulations.

The CSE is a legal entity in the form of a corporate body. It is governed by the Council (which is appointed by the Council of Ministers) and is supervised by the State through the Securities and Exchange Commission (CySEC). The Cyprus Securities and Exchange Commission was established in accordance with article eight (8) of the Cyprus Securities and Exchange Commission (Establishment and Responsibilities) Law of 1996 as a public corporate body.

The Cyprus Securities and Exchange Commission is administrated by a five member Board¹⁹ that is appointed by the Council of Ministers and mainly monitors the operation of the CSE and regulates the activities of all the CSE players. Until the end of 1999, the CySEC was understaffed (4 employees). Today it employs 42 people. During the period March 1996 to April 2000, the supervisory role of the Cypriot capital markets was given by the state to the Cyprus Stock Exchange. In order for the CySEC to apply fines it had to have the consent of the CSE. On April 20th 2000, the Law of the Cyprus Securities and Exchange Commission was passed with which the new CySEC was established, with full regulatory authority to oversee the Cyprus Stock Exchange and apply fines to market participants.

The CSE is an order-driven, multiple price, and continuous auction market with no market makers or specialists. The trading is realised through a computerised trading system. The main index of the CSE is the CSE General Price Index that reflects approximately, 93 per cent of the trading activity and 96 per cent of the overall capitalisation²⁰. In November 2000, the FTSE/CyCSE 20 was constructed with the

¹⁹ On the CySEC board, there is always a representative of the Central Bank of Cyprus who has no voting rights.

²⁰ The General Index ceased to exist on the 31st of December 2005. It was replaced with the New General Index that reflects the stocks of the Main and Parallel Markets of the CSE.

co-operation of the CSE, the Financial Times and the London Stock Exchange in order to monitor closer the market. In March 2002, a co-operation agreement was announced between the Cyprus Stock Exchange (CSE) and the Athens Stock Exchange (ASE), which includes provision for the setting up of a Cyprus derivatives market. In May, 2003, the CSE announced its participation in the FTSE Med 100 Index which was officially launched in June of the same year. It consists of 100 stocks from the Athens, Tel Aviv and Cyprus stock exchanges (weighted 56.55%, 42.55% and 0.89% respectively).

In June, 2004, the CSE, within the framework of upgrading its services and harmonizing with the international capital markets, completed a major development programme which was included in the CSE strategic plan. Specifically, it announced a package of new measures including the creation of three separate markets: the Main, Parallel and Alternative markets; in addition, it also announced the creation of separate markets for government and corporate bonds and mutual funds²¹. The three markets were implemented in September 2004 and with them, a set of new indices²².

B. Review of the market 1996-2004

During the first three years of its operations, the CSE attracted little interest, with average daily trading volumes around CY£250,000 (approx. Euro€427,000) and the index ranging from 74 to 105 points (base of 100). During this period, political concerns over the divided island's future reinforced investor cautiousness (ethnic clashes, missile system deployment and bi-communal talks). In 1999²³, after almost three years of subdued activity, the Cyprus Stock Exchange (CSE) soared roughly eightfold only to lose 90 per cent of its value in the following six-year period (notably the CSE General Index rose from 97 points on January 1st 1999 to 852

²¹ *Despite the fact that a law was passed in April of 2004 concerning the operation of Mutual Funds in Cyprus, no mutual fund has yet to be listed on the Cyprus Stock Exchange as the law is tax inefficient and therefore, no promoter is interested in setting up one.*

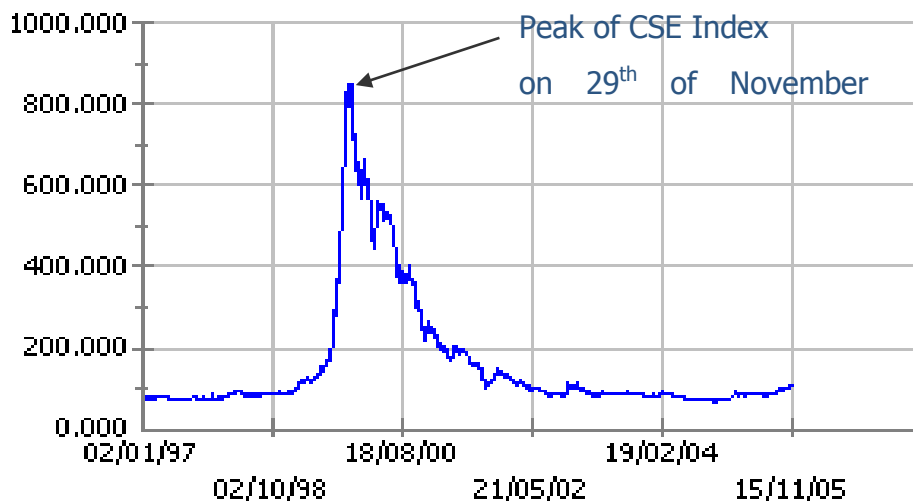
²² *The decision on market classification was taken on the 6th of September 2004, based on FTSE International*

²³ *The year 1999 was an important one for Cypriot investor psychology as it signalled the end of a threat from Turkey which derived from the possible deployment of a Russian missile system. It also began with a major acquisition by a commercial bank of two large insurance companies. In March of the same year, accession talks began with the EU.*

points on 29th of November 1999 (closing 837.5% higher than the beginning of the year)²⁴, gradually descending back to 103 points by September 30th 2001).

More than 250 firms applied for listing in the CSE within a period of 18 months, four times the number that was already traded on the CSE up to that time²⁵. IPOs in 1999 and 2000 were routinely oversubscribed many times over. This boom-and-bust cycle, between 1999 and 2001, saw the index follow a textbook bell-shaped curve, rising from 90 points at the end of 1998 to over 800 points near the end of 1999, only to plunge back to less than 100 points by the end of 2001 (see figure 1 below). During 2002 and 2003 the market continued a long-term decline, with brief spurts of growth, reaching a level of 80 in late 2003. In 2004, the market remained becalmed, with the index unable to break out of the range 80-90.

Fig 3 - The General Index of the CSE from January 1997 to November 2005



Source: CSE

²⁴ The whole market valuation was estimated at 255% of the country's GDP for the year.

²⁵ It is worth mentioning that during the period 2000-2004, 87 firms withdrew their listing application from the CSE and a further 46 applications for listing were rejected by the authorities. Thus, bringing the total number of companies attempting a listing but not succeeding eventually, to a staggering 133 firms.

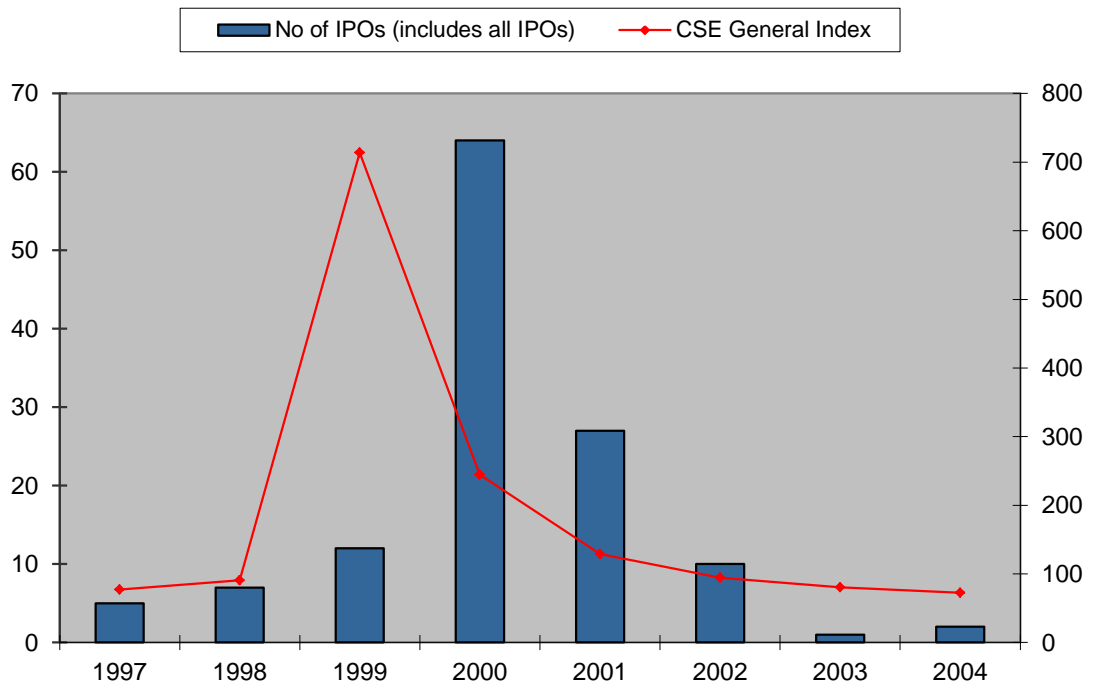
This boom dragged numerous Cypriot households in the CSE²⁶. Antoniou et al (2004) in their second survey of assets and debts of Cypriot households find that the participation rate of the population in direct stock owning in 2002 reached 51.4 per cent compared to 25.3 per cent in 1999. Moreover, they find that the largest increase in direct stock holding participation was reported among those with less than CY£5.000 reported annual income (from 8.80 per cent in 1999 to 30.70 per cent in 2002). They also find that stockholding participation increased for all age groups, even for households above 70 years (from 10.4 per cent in 1999 to 20.3 per cent in 2002). They also find that one third of the Cypriot households in 2002 owned stocks directly in only one company (42.4 per cent in 1999). The authors attribute this behavioural aspect mainly to the establishment of the Co-operative Society's investment company, 'Demetra'²⁷, in which almost all clients of the Co-operative sector bought shares. Especially elderly households, who had been banking with the Co-operative sector all their lives, trusted the newly established company and invested in large numbers in its stock.

Whilst the primary market was experiencing great demand, the secondary market was beginning to show signs of fatigue and soon the bubble imploded, causing severe losses to many investors and driving psychology vertically down.

²⁶Several notable international newspapers such as *The Economist* (Oct 21st 1999) and *Time International* (Sep 13th 1999) noted that the CSE was on its way to becoming a large bubble which would eventually implode devouring many people's life savings.

²⁷*Demetra Investment Public Ltd*, a closed-ended fund which was set-up in 2000 by the Co-operative movement, was the largest IPO in Cypriot history with a primary offering of CY£200 million (approx. Euro 342 million).

Fig 4 – The Cypriot IPO market 1997-2004



Source: CSE, the author

It is interesting to note that even more sophisticated investors (e.g., foreign institutional investors) could not possibly counterbalance such overvaluation because of regulation prohibiting short-selling²⁸. Cyprus Stock Exchange statistics show that the trading volume by foreign investors at the time was less than 10 per cent of the total stock market trading volume²⁹.

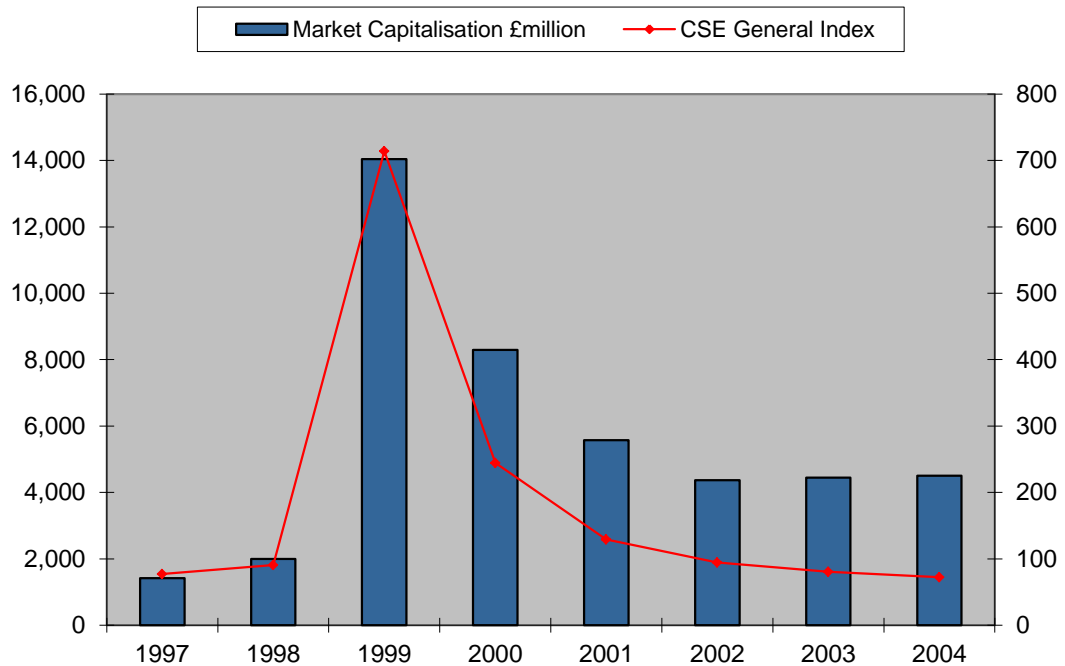
A study into the causes of the CSE crash, released by the House of Representatives in June 2002, implicated a number of actors and systemic flaws but offered little consolation to the island's thousands of small investors. Another study by the Central Bank of Cyprus helped explain the relatively mild impact of the CSE crash on the Cypriot economy at large. According to this study, most investors used their own funds to invest in the CSE (as opposed to borrowed funds), and they had no

²⁸ Also there were not any derivative-type instruments present in the CSE for risk management.

²⁹ Foreign investors are still largely absent from the Cyprus Stock Exchange mainly as a result of the lack of satisfactory Custodian regulation.

pressing need for the money invested³⁰. Moreover, the study claimed that most investors sustained only paper losses, and they have not substantially modified their consumption patterns.

Fig 5 – CSE market capitalisation 1997-2004



Source: CSE, the author

In an attempt to mitigate the problems created by the huge drop in the CSE index, several actions were taken by the Cypriot government. An expert team was called from Greece to examine the problems and suggest corrective actions. Suggested measures (not necessarily implemented) included approving legislation for the creation of open-ended mutual funds, setting up an administrative agency to mitigate differences between banks and investor-debtors³¹, setting up a ‘guarantee’ fund managed by a foreign organisation to ensure the stability in the CSE, investing money from public pension funds in the CSE, improving the quality of financial

³⁰ Others claim that a lot of money from the grey economy was invested on the CSE, and therefore the reason for the relatively mild impact on the economy and the banking system.

³¹ The three local banks lent approx. €400 million during the period 1999-2001, mainly to retail investors, through investor-account schemes. When the Cypriot Stock Market eventually collapsed, and these accounts were packed with losses, the banks sued their investor-clients to recover their monies and investors countersued the Banks for negligence (these schemes were set-up in the form of discretionary fund management). Such cases are still tried in court, even though many of them have been settled or won by banks.

reports provided in the prospectuses of start-ups, and lastly, approving a corporate governance code for firms that are listed in the CSE. However, local investor confidence had already been shaken to the core. Even though most of the underlying weaknesses in the system have been rectified over the last eight years, mainly as a result of new legislation³², local retail investors remain largely on the side lines.

C. Going public in the Cyprus Stock Exchange 1996-2004

i. Prevailing regulatory and institutional framework

In terms of institutional and regulatory framework, one can observe two distinct time periods in the CSE primary market. The period that is prior to the enactment of the new legislation for financial services firms in August 2001 (i.e., March 1996 to July 2001), and the period after that (August 2001 to December 2004). The period March 1996 to July 2001 is characterised by certain important regulatory and institutional deficiencies that possibly contributed to the development of the hot IPO market of 1999–2000. These are the following:

- There was no explicit or implicit recourse to underwriters, auditors or any other counsel/advisor of an issue against misrepresentation or misuse of information surrounding IPOs making the threat of costly litigation less critical as a factor that could affect the pricing of Cypriot IPOs. No due diligence whatsoever was undertaken for IPO candidate firms by underwriters in the period March 1996 to July 2001 as this was not a requirement.
- No criteria for corporate governance existed. As a result a number of advisors (mostly legal) were part of corporate boards that they were advising for listing, thus laying the grounds for possible conflicts of interest.
- No regulations for market participants regarding inside information and the users of that kind of information existed.

³² *With the new legislation which was voted in April 2009, the Cyprus Securities and Exchange Commission was given more powers to oversee the key players in the market. As a result of this upgrading, the new council of the CySEC (appointed in July 2001) issued a circular in August 2001 that due diligence (both legal and financial) was compulsory for listing new companies in the CSE. From 1996 to August 2001, permission for listing shares in the CSE was granted by the CSE authorities with the concordance of the CySEC. With the new legislation, the CySEC was the only authority to approve listing particulars and prospectuses in the CSE.*

- No lock-up agreements were allowed for shareholders in IPOs.
- Stabilisation activities by underwriters were not allowed in the IPO aftermarket.
- No formal market-making framework existed.
- Short selling was not allowed³³.
- No rules existed for analysts' professional conduct.
- No definition of institutional investors (professional investors) existed³⁴.
- No rules for 'Chinese walls' in financial services companies existed.
- Allocation of shares was at the discretion of the Board of Directors of an issuer from 29th of March 1996 to 27th of October 2000, when it became compulsory to allocate shares to all participants and if oversubscribed, then follow a pro-rata allocation³⁵.
- No professional certification existed for people working in investment banks (except for brokers – who also acted as fund managers, investment bankers, investment advisors etc.).
- By submitting the IPO application, underwriters were committed to a stand-by underwriting agreement. The CSE insisted that the proposed share price of the IPO was fixed at the time of applying for a listing or shortly afterwards and not just before final approval was granted. The price could not be revised, thus it was limited to the price set out in the prospectus. Effectively, the investors could only bid on the quantity of shares they would buy, not on the price of the shares (i.e., no price adjustment existed to regulate excessive demand – fixed price selling mechanism).
- There was a significant time-lag between issue date and the first day of trading which averaged 5 to 6 weeks (ranging from 14 days to 105 days). This time-lag may have influenced the risk profile and costs of IPOs

³³ *It is worth mentioning that even today, short selling is not allowed and the concept of the Market Maker is absent from the CSE.*

³⁴ *In February 2001, a new law was enacted to forbid the collection of monies from investors that applied through irrevocable applications in order to participate in an IPO. Companies that were not listed by a certain period of time in the CSE were forced to return these funds to the investors. This created market havoc.*

³⁵ *According to the Law 136(I)/2000, article (e), the board could not disqualify any investor from the offering. Until mid-2000, in the case of oversubscription of an IPO, firms would also keep the interest on the monies of the investors, which in certain cases amounted to significant sums.*

- There was also significant time lag between application date and listing date which averaged over the period of the sample 317 days.
- From March 1996 to most of 2001, security titles in the CSE were not dematerialised³⁶. This created extreme bureaucracy and significant loss in transaction time for investors and authorities alike³⁷.
- From CSE's inception (1996) to July 2001, prospectuses were approved by the CSE with the consent of the Cyprus Securities and Exchange Commission (CySEC). After July 2001, CySEC was the only approving authority.
- Up and until September 2004, there was only one market for all listed shares in the CSE³⁸.

Subrahmanyam and Titman (1999) argue that when stock markets are relatively small, information conveyed through stock prices is less accurate, which generally decreases the advantages of pending for public capital. As the stock market grows, however, the accuracy of information generally improves, yielding greater incentives for going public decisions. Martell and Stulz (2003) argue that countries that liberalise their equity markets have dramatic positive returns in the year following the liberalisation, but these dramatic returns are followed by poor returns, raising the question whether stock prices overreact to equity-market liberalisations. Equity-market liberalisations decrease the cost of capital in two ways. First, Henry (2000) shows that liberalising countries experience unusually high share returns before liberalisation date, which is when investors learn that a liberalisation will take place. Second, Bekaert and Harvey (2000) show that dividend yields (a good proxy for the cost of capital) fall after liberalisation. Martell and Stulz (2000) argue that in the long-run, the ability of firms to benefit from an equity-market liberalisation depends on corporate governance and the protection of investor rights. The success of the liberalisation is determined by the extent to which foreign investors buy shares, either new or existing. As investor protection improves, ownership by controlling

³⁶ In April 2001, the law that enacted the formation of the CSE Central Depository was voted. However, it would take more than 2 years to be completed.

³⁷ In September 1999, the Cyprus Stock Exchange closed for a month to allow time for brokerage houses, investors and firms alike to sort out the mess that was created with the share transfers that took place the previous months.

³⁸ The Parallel and Alternative Markets were created in September 2004 together with the new General Index of the CSE.

shareholders falls, outside shareholders can own more shares, and firms can raise more capital from foreign investors.

Engelen and van Essen (2010) using a large-level dataset of 2920 IPOs covering a wide range of 21 countries having different institutional and legal frameworks show that the quality of a country's legal framework, as measured by its level of investor protection, the overall quality of its legal system and its level of legal enforcement reduces the level of underpricing significantly. On a similar tone, Hopp and Dreher (2007), using a dataset of more than 500 country-year observations from 29 countries, find that increased protection of shareholders and greater accounting transparency contribute negatively to variations in underpricing. They also find that underpricing is higher when majority shareholders have more leeway to repress minority owners. Moreover, they argue that problems of asymmetric information can be resolved when countries enforce disclosure.

La Porta et al. (1997) show that the number of IPOs is positively related with investor rights, the legal origin and the law and order tradition of a country. Chiou et al (2010) examine 4916 stocks from 37 countries and find that stronger investor protection leads to a decrease in investment risk. Giannetti and Simonov (2006) empirically demonstrate that minority and other investors who generally enjoy only security benefits are reluctant to invest in companies with weak investor protection.

Banerjee et al (2011) using a sample of 8700 IPOs from 36 countries around the world over the period 2000 to 2006, study the impact of country-level information asymmetry, investors' home-country bias, effectiveness of contract enforcement mechanisms and accessibility of legal recourse on IPO underpricing. They find evidence that IPO underpricing is higher in countries with higher level of information asymmetry, lower level of home-country bias, less effective contract enforcement mechanism and easier access to legal recourse for investors.

The economic significance for firms operating in a poor legal environment is important as it raises their cost of capital through greater underpricing. La Porta et al. (2002) document that investors are willing to pay more for financial assets when being better protected by the legal system. Shleifer and Wolfenzon (2002) analyse

the impact of investor protection on the going public decision. They show that firms would be larger, more valuable, and more plentiful, dividends would be higher (and diversion of profits lower), ownership concentration would be lower, and stock markets would be more developed in countries with better protection of shareholders.

Clearly, the above regulatory and institutional deficiencies of the Cypriot capital markets had a negative effect on the primary market and the quality of services offered since they hindered the proper functioning of the capital markets. After the enactment of the Financial Services Law in 2002, a number of regulatory deficiencies were rectified following a report prepared by Greek consultants commissioned by the state. However, since 88% of the sample's IPOs were listed by August 2001 (and no company that was eventually listed on the CSE applied for a listing after the year 2000), it is imperative that such a distinction is made.

ii. Procedure for listing in the CSE

Each company that seeks a listing must satisfy *inter-alia* some basic requirements, the most important of which are:

- The issuer must have the right to issue the proposed category of titles in accordance with the company's Memorandum and Articles of Association.
- The expected market value of the proposed issue must be in excess of CY£600.000³⁹ (or approx. Euro 1 million).
- There must be no restrictions in the transferability of the titles listed.
- The issuer must have published audited accounts for at least the three years preceding the application⁴⁰.

³⁹From March 1996 up until December 2000, the total equity to be listed should be at least CY£600.000 (approximately €1.0 million). In addition, the main shareholder should not own more than 70% of the equity capital and at least 25% of the equity capital should be dispersed to the wider public (which, however, was not defined explicitly). For companies applying after January 2001 then the total equity to be listed should be at least CY£2.000.000 (approximately €3.5 million) and the main shareholder should not own more than 60% of the equity capital and at least 35% of the equity capital should be dispersed to the wider public.

⁴⁰This requirement of having at least three years of audited accounts halted a number of start-ups from listing. There was another requirement along these lines emanating from the Companies Act Chapter 113, which required 5 years of balance sheet figures for firms to sell shares to the public restricting even more, younger companies to list.

- The prospective issuer must be able to demonstrate that it has adequate working capital before the issue⁴¹.
- The issuer must safeguard that existing shareholders will enjoy pre-emption rights in every subsequent issue.
- The issuer must make a commitment to list all the titles of the same category that have already been issued, or will be subsequently issued.

According to CSE Regulation 60, issuers could list their shares on the Cyprus Stock Exchange in one of the following ways:

- a. By offer for sale – through the placement of shares that had already been issued
- b. By public offer for sale to the public of titles which have already been issued, or allocated
- c. By public offer for subscription for the purchase of titles which have not been issued yet or allocated
- d. By private placement – an offer is made to specific investors for the sale of shares that have already been issued or are about to be issued.

In the case where the offer for sale to the public was chosen, then the issue had to be fully underwritten by at least one underwriter which had to be approved by the Council of the Cyprus Stock Exchange. Underwriting meant that the underwriters must stand by to purchase the unsold portion of the issue at the offer price less their fees⁴². For their assistance the underwriters receive a fee for underwriting and distributing the IPO.

The offer price⁴³ is set by the lead manager of the issue who was also the lead underwriter⁴⁴. The approach used to arrive at the offer price is one that utilises the

⁴¹Having said that, no comfort letter was required from the auditors as this is the practice in other bourses.

⁴² The CSE did not grant its approval for a listing until an underwriting agreement was in place, properly signed by all parties.

⁴³ The great majority of IPOs in the CSE were executed through a fixed-price offering. In a fixed-price offering, shares are offered to all categories of investors, private and institutional, at a single and unchangeable price set in advance by the underwriter and filed in the introduction prospectus. Investors submit their applications for shares at the fixed price and rationing rules (possibly random but most often pro rata) are used to allocate shares. Fixed price offerings exist in all European countries except Austria, Greece, Finland and Spain. Specific

price-earnings multiplier. That is, after determining the appropriate price-earnings (P/E) ratio of the issuing firm given its comparison to its peers, and after projecting its future earnings per share (EPS), the offer price is estimated as the product of the P/E ratio and the EPS. The prospectus includes comparative data on the issuing firm's and its industry's P/E ratios⁴⁵ and the firm's EPS forecasts⁴⁶ so that investors can form an independent opinion of the pricing of the issue.

After the offer price was set, the offering period was specified during which investors were invited to subscribe to the new issue. Sometimes, the offering period might take place several weeks after the offer price was set. The offering period usually lasted four to five weekdays, but for slow subscriptions it was possible to allow an extension of the offering period. If the offer was heavily oversubscribed, the subscription period finished as early as at the end of the first subscription day or the next.

To make sure that an investor was allocated the desired amount of shares, investors usually subscribed for a multiple of the number of shares they really wished to buy⁴⁷. Then the final allocation was done on a priority basis. The allocation rule was described in the public announcement that calls investors to subscribe as well as in the prospectus. Investors subscribed at the bank branches or stockbrokers as specified in the offering announcement. Following the successful offering of the issue, formal listing and public trading of the issue occurs about a month after the end of the offering period.

terminology is used in the UK, where any IPO for which shares are offered to the public, either through a fixed-price offer or through an auction, is called an 'offer for subscription' if new funds are raised and 'offer for sale' if not.

⁴⁴ *If more than one underwriters were present then they set the price jointly*

⁴⁵ *In practice, due to lack of data from issuers in same or similar sectors, the P/E ratios employed were those of all the other IPO firms preceding the particular IPO.*

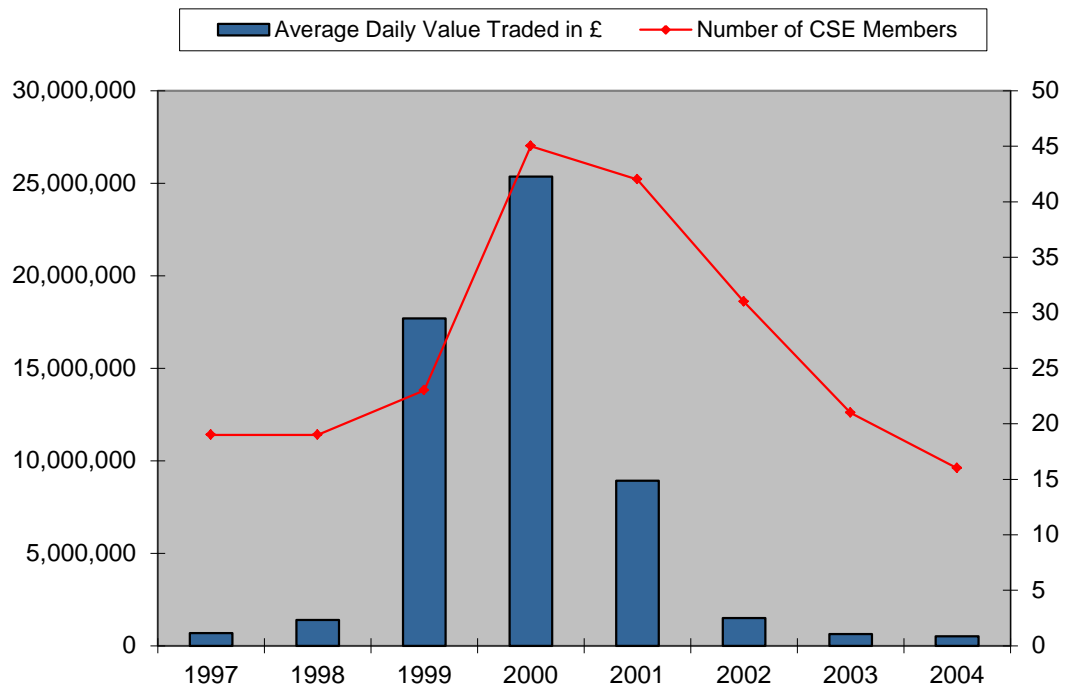
⁴⁶ *After the CySEC issued a circular on due diligence and the responsibilities of underwriters and issuers alike in July 2001, most of the issuers refrained from using projections in their prospectuses and the valuation was based on trailing P/E ratios i.e., ratios based on audited EPS.*

⁴⁷ *Many investors subscribed to IPOs through various names such as their spouses, companies, and children so that they raise the possibility of being allocated more shares than if they had applied on their own.*

Most of the IPOs in the CSE also included a sizable private placement portion, whereby, shares were offered to a group of investors including suppliers, clients, personnel and other parties. The number of shares offered in the private placement was added to the existing number of shares in the calculation of the shareholder dispersion rule of 25%.

Nearly 95 per cent of all IPOs in the sample are family-owned⁴⁸. There have been no privatizations in Cyprus.

Fig 6 – Boom and bust in the CSE



Source: CSE

⁴⁸ Family-owned IPOs are defined as firms exclusively controlled by a family or by private persons before going public.

V. Research design

A. Sample selection procedure

In this section of the chapter, the description of the sample including descriptive statistics is presented. Moreover, the data sources are mentioned, the process of gathering the data as well as the criteria for selecting the companies in the sample are laid out.

i. Selection criteria – sample period

During the period 1997-2002 a total of 124 firms were listed in the Cyprus Stock Exchange, out of which 79 are included in the final sample. This period was chosen for the following reasons:

- The CSE was inaugurated on the 29th of March 1996 and the first IPOs took place in 1997 (the first IPO of a non-investment company took place in August 1997).
- The period 1999-2001 is characterized by a ‘flood’ of new listings and abnormal returns, largely in the primary, but also in the secondary market. From 2002 and up until the end of 2006 (November) there were no IPOs in the CSE.
- The period 1997-2002 is characterized by a significant amount of socioeconomic changes as well as changes in the political, legal and fiscal front which inevitably imparted on investor psychology and stock market economics.

The criteria employed in selecting the companies comprising the sample are based both on local constraints as well as on international practice. These are as follows:

- a. The companies must have been listed in the CSE over the period January 1997 to December 2002.
- b. The companies listed employed the method of initial public offering to the public, with opening and closing dates of the offering period for new shares.
- c. Investment companies (both closed-ended and private equity) and overseas companies are excluded from the sample.

- d. The companies in the sample must not be delisted from the CSE at least for a period of 12 months from the date of listing.

Applying these criteria to the population, the number of companies forming the sample becomes 79, which represents 64% of the total number of companies listed on the Cyprus Stock Exchange over the period. Table 3 below shows the screening process that was followed to arrive at the final sample.

Despite the relatively small sample size, Gasbarro et al. (2003) argue that in other emerging market IPO studies the sample size is also small. For example, both Hameed and Lim (1998) and Omran (2005) employ a sample size of 53 firms to assess IPO issues on the Singaporean and the Egyptian stock markets respectively. Other studies also employ small sample sizes for example, Lyn and Zychowicz (2002) and Dawson (1987) who consider 33 and 21 new issues on the Hungarian and Malaysian stock markets respectively. Paudyal et al (1998) employ a sample of 61 IPOs to study the first-day returns of Malaysian IPOs. Hearn (2011 and 2012) in examining sub-Saharan and North African IPOs also uses small samples. In his 2011 paper Hearn, using a sample of 62 IPOs from across North African countries, he examines the performance effects of family ownership and influence on board structure and its composition of firms that have undergone an IPO. In his 2012 paper, he employs a sample of 62 IPOs from across Sub-Saharan Africa to study the impact of board governance features and the presence of foreign, indigenous high society executives and board diversity on levels of IPO underpricing. Agathee et al. (2012) employ a sample of 44 IPOs to assess the characteristics of the hot and cold IPO markets on the Stock Exchange of Mauritius. There are also other studies such as Procianoy and Cigerza (2007), who consider 29 new issues on the Brazilian market.

Insert Table 3 – Sample selection

Table 4 below shows the distribution of the 79 IPOs according to their industrial sector⁴⁹.

Insert Table 4 – IPOs per industrial sector

ii. Procedure for collecting data

The first step in collecting the data was to establish the data space which comprised all the listings in the Cyprus Stock Exchange over the period January 1997 to December 2002. These were collected from the Annual Fact Book of the CSE. In addition to these data sources, a proprietary source of information was the data bank of a leading investment bank in Cyprus which the author has access to, providing the date of application of listing of every single IPO. This data was double-checked and verified with the CSE. Then, each and every prospectus was carefully reviewed by the author and data were hand-picked to obtain the underwriters, auditors, legal advisors, board of directors, offering price, operating age, total assets, net assets, sales/turnover, debt, equity, total funds raised, issue costs, and method of listing.

The second step in the process was to collect the closing prices for each company in the sample for the 1st, 5th, 10th, 30th, 60th and 90th day of trading as well as the corresponding General Index price level from the CSE data bank. In addition, the price data for each IPO in the sample were gathered over a 12-, 24- and 36-month period on a daily-basis, from the date of listing and the corresponding CSE General Index price level.

B. Methodology

A total of 79 IPOs listed in the CSE are examined by using standard event study methodology (78 for long-run performance as one is delisted/acquired within 12 months of its listing). Event study methodology is based on acceptance of the Efficient Market Hypothesis (EMH). The theory states that the value of a security is equal to the discounted value of its all future cash flows and this value includes all

⁴⁹ *The industrial sectors are presented as classified at the time of the sample by the Cyprus Stock Exchange.*

information about the firm. Security market line formulation is used in event studies to compute market adjusted stock returns. If unexpected information becomes available for market participants, the value of a security changes to reflect the value of new information. The firm value affected by new information could be captured by abnormal returns (McWilliams and Siegel (1997)).

IPO returns are analysed for two time periods, namely, short (1st, 5th, 10th, 30th, 60th and 90th day of trading) returns, and long-run returns, namely 12-month, 24-month and 36-month returns.

i. Regression model

The summarised model is as follows:

$$ADRAW_{j,t} = \beta_0 + \beta_1UND_{j,t} + \beta_2AUD_{j,t} + \beta_3LNTAL_{j,t} + \beta_4STDRTNS_{j,t} + \beta_5LNAGE_{j,t} + \beta_6OWNER_{j,t} + \beta_7LEVER_{j,t} + \beta_8ROE_{j,t} + \beta_9LNPBT_{j,t} + \beta_{10}SGROWTH_{j,t} + \beta_{11}LNGRP_{j,t} + \beta_{12}PROJ_{j,t} + \beta_{13}OFPR_{j,t} + \beta_{14}UNDPRT_{j,t} + \beta_{15}ICOSTS_{j,t} + \varepsilon_{j,t} \quad (1)$$

where,

Dependent Variable

$ADRAW_{j,t}$ is the First-Day Raw Returns for firm j at time t

Independent Variables

Advisor/issue-certifier: $UND_{j,t}$ is a dummy variable that equals one if the underwriter is one of three prestigious underwriters and zero otherwise.

$AUD_{j,t}$ is a dichotomous variable taking the value of one if the auditor is one the big five and zero otherwise.

Market/institutional: $LNTAL_{j,t}$ is the natural logarithm of the number of days from application date to listing date.

$STDRTNS_{j,t}$ is the standard deviation of raw returns that an IPO company registers the first twenty-one (21) days of listing.

Issuer specific:

$LNAGE_{j,t}$ is the issuer operational age as measured by the natural logarithm of the number of years of incorporation to the IPO date.

$OWNER_{j,t}$ is the percentage of shares retained by pre-IPO shareholders.

$LEVER_{j,t}$ is the bank debt to shareholders' funds ratio of the firm based on last audited accounts in the prospectus.

$ROE_{j,t}$ is the return of equity of the IPO firm as calculated by the audited profits after tax of the year before listing and the shareholders' funds (net assets).

$LNPBT_{j,t}$ is the average pre-tax profits (or losses) for the last three years before the firm's listing.

$SGROWTH_{j,t}$ is the sales growth exhibited by the IPO firm the year before the listing and the year before that.

IPO-specific:

$LNGRP_{j,t}$ is the size of the issue as measured by the natural logarithm of gross proceeds (no. of shares sold times the offering price).

$PROJ_{j,t}$ is a dummy variable which takes the value of one if the prospectus of the IPO firm contains financial projections.

$OFPR_{j,t}$ is the offering price of the IPO.

$UNDPRT_{j,t}$ is a dichotomous variable that takes the value of one if there is participation of the underwriter in the IPO firm's equity capital prior the offering.

$ICOSTS_{j,t}$ is a variable denoting the total direct costs (expressed as a percentage of the total funds raised) incurred for listing

$\varepsilon_{j,t}$ = error term for firm j at time t

ii. *Definition of the dependent variables*

1. Initial Period Returns

The initial (first day) raw return of an IPO is defined as:

$$UP_{raw} = \left(\frac{P_{initial} - P_{offer}}{P_{offer}} \right) \quad (2)$$

where,

$P_{initial}$ is the first day closing price of IPO_j and P_{offer} is the offering price as set in the approved prospectus.

Raw initial return, which is calculated by equation (2) above, is ideal in a market that there are no opportunity costs, and no time lag between the closing day and the first day of trading in the stock exchange. During this period major changes in market conditions could occur, and much information can be revealed. This will have as a result the initial return measured to be a result of changes in market conditions rather than initial mispricing by the underwriters. So the raw initial return is adjusted for market changes.

The initial return is adjusted for market changes taking into account movements of the Cyprus Stock Exchange General Index between the closing date and the first day of trading.

The first day adjusted return for an IPO is defined as:

$$UP_{adjusted} = \left(\frac{P_{initial} - P_{offer}}{P_{offer}} \right) - \left(\frac{I_{initial} - I_{offer}}{I_{offer}} \right) \quad (3)$$

where,

$I_{initial}$ is the value of the CSE General Index on the first day of trading and I_{offer} is the value on the last day of the offering period.

Equation (2) above would apply more to perfect market conditions, where there is no time gap between the last day of application and the listing date, no opportunity cost and when no transaction costs exist. The market return is calculated for the period between the closing date of the offering period to the listing date.

Therefore, calculated returns have taken into account changes in market conditions from the closing offer date for applications to the first trading day. This time gap in many developed countries is usually short but for the sample tested it ranges from 28 days to 105 days. During this period many changes may happen in market conditions causing deviations in the observed premium measured by equation (2). Therefore, the raw initial return derived by equation (2) is adjusted for market changes by taking into account movements of the Cyprus Stock Exchange General Index between the closing date of offer and the first trading day of the IPOs as shown by Equation (3).

Due to the length of the time lag between the closing date of the offer period and the first trading day of the IPO, adjustments will take into account both the changing market conditions and opportunity costs of the money deposited with the application. In the cases whereby shares are undersubscribed, the applicant is allocated the amount of shares applied for “...the adjustment for market changes would take into account the effect of the opportunity cost of capital” (Uddin (2001)). In the case shares are oversubscribed then rationing should be applied and there is an opportunity cost lost for the money deposited with the application.

Table 5 below shows the descriptive statistics for the initial returns at various points of time after the listing.

Insert table 5 – Initial price performance by year of issuance

As it can be observed, average raw returns are positive over the period 1997-2002 across all time periods. In fact, the momentum that was created in 1999 in the primary market was so strong that high returns carried through until 2001. Even

ninety days after listing, CSE IPOs offer on average exceptional raw and adjusted returns for the period 1997-2002 (70.93% and 89.42% respectively). Adjusted returns are positive until 2001 for four out of the five time periods in table 5 above. Specifically, as shown in Panel E, 90th-day adjusted returns for 2001 turn slightly negative (-1.28%), whereas, raw returns delve well into negative territory (-27.53%). This demonstrates the fact that the secondary market returns were rapidly deteriorating at a rate which was faster than the returns of the primary market (newly listed companies) and this becomes more pronounced during the period 2000-2001.

Another important conclusion that can be drawn from table 5 is that the average first day raw returns in 1999 are a multiple of over 4 times those for the whole period (1997-2002). This allows us to employ the term 'hot issue period' for 1999. Ibbotson and Jaffe (1975) first coined this term when examining a sample of US IPOs over the period 1960-1970 to describe the difference in first day returns that existed between certain time periods and the average of the whole period. If one excludes 1999 data from the sample, then the mean (median) raw and adjusted initial returns for the period 1997-2002 become 75.30% (16.47%) and 81.18% (18.97%) respectively and these are further reduced to 27.35% (0.96%) and 55.12% (34.51%) respectively for the 90th day returns. The standard deviation of raw (adjusted) returns is also reduced from 242.3% (241.87%) to 177.71% (177.96%) for first day returns and from 211.86% (201.42%) to 152.05% (153.70%) for 90th day returns, demonstrating the influence of the 'hot' issue period on the sample data. If one excludes IPOs which raised less than €3 million in gross proceeds, then first day raw returns are still quite high at 118.3% and the adjusted first day returns are 124.2%. Excluding IPOs with less than €5 million in gross proceeds does not change the picture much as first day returns stand at 82.7% and adjusted first day returns at 88.7%.

The first day returns of CSE IPOs over the period examined are exceptionally high. This can be inferred by comparing the first-day returns shown in Appendix A. Even if 1999 is excluded from the data, CSE IPO first-day both raw and adjusted returns are the highest in Europe and amongst the highest in the World. Gajewski and Gresse (2006), compare the returns of a sample of 2104 European IPOs from 15 European countries. They find mean raw returns of 22.06%. Although underpricing is

observed in every country in the sample, the level of underpricing varies notably from one national market to another. Poland, Portugal, the Netherlands, Switzerland and the UK are close to the mean. In Austria, Belgium, France, Italy, Spain, Sweden and Turkey, underpricing is relatively low whereas in Greece, Germany and Finland raw returns are above the mean. They also find that in New Markets (Nuevo Mercado, Neue Markt, etc.) underpricing is greater and this is mainly driven by new technology companies and also the average difference in initial returns between traditional and growth segments nearly doubles during hot issue periods.

As far as the CSE is concerned, Gounopoulos et al. (2008) examine the underpricing of CSE IPOs over the period 1999-2002. They use a sample of 75 IPOs and find mean (median) first day raw returns of 100.49% (7.21%) and adjusted first day returns of 108.63% (18.24%). The standard deviation of first day raw returns was found to be 227.09% and 226.02% for adjusted first day returns.

2. Aftermarket period returns

A methodology similar to Ritter (1991) is employed, whereby periods of IPO performance measurement are selected. The returns in this study are calculated for the initial return period (day 1), defined as the offering date, to the first closing price listed on the CSE and the aftermarket period, defined as the three years after the IPO, exclusive of the initial returns period. The initial return period is defined to be month 0, and the aftermarket period includes the following 36 months, and months are defined as successive 21-trading-day periods relative to the IPO date. Thus, month 1 consists of event days 2-22, month 2 consists of event days 23-43, month 3 consists of event days 44-64, and so on.

There is a difference of scholarly opinion as to the measurement, however, and this is taken into account as well. Kooli and Suret (2002) argue that one major problem with long-run performance of IPOs is the non-standard distribution of their returns. Barber and Lyon (1997) claim that many of the common methods used to calculate the long-run returns are conceptually flawed and lead to biased test statistics, namely new listing, rebalancing and skewness. Moreover, they showed that the degree and the magnitude of the biases depend on the method used to compute the long-run

abnormal returns. Barber and Lyon (1997) and Barber, Lyon and Tsai (1999) identify three problems with inference in long-run event studies using BHARs. Labelling these problems the new listing, rebalancing and skewness biases, they use simulations to examine the impact of those biases on inference when abnormal performance is measured using BHARs. Although, Barber and Lyon (1997) provided evidence that CARs are less affected by the abovementioned biases than Buy and Hold Returns (BHARs), they went on to argue that they prefer the latter because it measures the investors' experience. Kothari and Warner (1997) also find that long-horizon BHARs are significantly right-skewed, although CARs are not.

On the other hand, Fama (1998) and Mitchell and Stafford (2000) argued that BHARs may overstate the long-run abnormal performance since it can grow with the return horizon even when there is no abnormal return after the first period. They argue that the use of CARs is better suited because it yields less spurious rejections of market efficiency than do BHARs. That is to say, the abnormal long-run IPO performances are sensitive to the methodology employed and hence, there is no general consensus on how to measure the long-term abnormal returns.

The Fama and French (1996) three-factor model has become quite popular in empirical studies for the USA and other countries. The idea is that the additional factors size and book-to-market may be able to better explain stock returns. However, there is no theoretical foundation for these factors yet (Bessler and Thies (2007)). Moreover, a number of studies have indicated the limitation of this approach (e.g., Barber and Lyon, (1997); Brav, (2000)). In a study of IPOs at the 'Neuer Markt' in Germany, Bessler and Kurth (2005) find only marginal evidence for these factors. In addition, Khurshed et al. (2004) provide evidence for IPOs in the UK that long-run returns are not that different under BHARs and the Fama and French approach. Jeanneret (2005) provides similar empirical evidence for SEOs in France.

For the purposes of this study, and to assess the long run performance of newly listed firms in the CSE, Cumulative Abnormal Returns (CARs) will be employed but Buy and Hold Abnormal Returns (BHARs) will also be calculated.

CARs are defined as:

$$CAR = \sum_{t=1}^n AR_t \quad (4)$$

where,

$$AR_t = \frac{1}{N} \sum_{i=1}^N AR_{i,t} \quad (5)$$

Abnormal returns are calculated using the market-adjusted model as follows:

$$AR_{i,t} = R_{i,t} - R_{m,t} \quad (6)$$

where, $R_{i,t}$ is the monthly return on security i in month t and $R_{m,t}$ is the benchmark return for the same period. The benchmark employed is the CSE General Index as this is the only index of the market over the period examined.

Table 6a below shows descriptive statistics for the Cumulative Abnormal Returns (CARs). These are calculated from the end of the first day of trading (listing) of the IPO firms. CARs are computed for 12-, 24-, and 36-months periods.

The corresponding BHARs are also calculated and these are shown on table 6b below.

The holding period return (BHAR) for a single stock is calculated for the period T as follows in:

$$BHAR_{i,T} = [(1 + R_{i,1})(1 + R_{i,2}) \dots (1 + R_{i,T})] - 1 \quad (7)$$

this can be rewritten as:

$$BHAR_{i,T} = \prod_{t=1}^T (1 + R_{i,t}) \quad (8)$$

where $R_{i,t}$ is the return of stock i at time t and T is the time period for which the BHAR is calculated. For an equally weighted portfolio of stocks returns are calculated as follows:

$$dBHAR_{p,T} = \frac{1}{N} \sum_{i=1}^N BHAR_{i,T} \quad (9)$$

where $dBHAR_{p,T}$ is the average BHAR of the portfolio, N is the number of stocks in the portfolio and T is the time period for which the BHAR is calculated. In order to calculate BHAR, the return of the benchmark is subtracted from the return of the IPO stock.

$$BHAR = \frac{1}{N} \sum_{i=1}^N [(\prod_{t=1}^T (1 + R_{i,t})) - (\prod_{t=1}^T (1 + R_{M,t}))] \quad (10)$$

Insert table 6a – 12-, 24-, and 36-month CARs

Insert table 6b – 12-, 24-, and 36-month BAHRs

Insert table 6c – 3-monthly, 6-monthly, 9-monthly- and 12-monthly CARs

Insert table 6d – 3-monthly, 6-monthly, 9-monthly- and 12-monthly BHARs

As it can be observed from table 6a above, 12-month CARs are positive over the period (1997-2002) at 8.72% with a median of 14.23% and standard deviation of returns of 49.20%. As time progresses, CARs become negative. Mean 24- and 36-month CARs are negative for all years and the whole period as well (-17.64% and -25.57% respectively for 1997-2002)⁵⁰. Volatility also increases over the period, from 49.20% in 12-month to 78.390% in 36-month CARs. Even if the data associated with year 1999 are ignored ('hot issue period'), volatility increases, albeit

⁵⁰ Ritter (1991) reviews and compares his results with several other studies and concludes that, on average, firms exhibit positive returns over comparable benchmarks during their first year of trading and negative returns during the following 3 years.

at a lower rate. Moreover, if 1999 is excluded from the sample calculations, CARs are higher. 12-month CARs for 1999 are negative (-15.76%), whilst 12-month CARs for 1997-2002 with and without 1999 are positive (8.72% and 11.52% respectively).

Looking at table 6b, 12-month BHARs are negative over the period (1997-2002) at -4.28%, a median of -0.73% standard deviation of 42.11%. BHARs are in negative territory both in 24- and 36-month periods. Specifically, 24-month mean (median) BHARs stand at -22.96% (-12.62%) and 36-month BHARs at -25.07% (-15.30%) respectively. Volatility rises from 12-month to 24-month BHARs, but declines for 36-month BHARs. Overall, BHARs are consistent with the results found with CARs.

Looking at tables 6c and 6d, monthly CARs and monthly BHARs are positive for 3-, 6-, and 9-months across all time periods. The standard deviation of the returns in 1999 is on average the highest amongst the rest of the years for both CARs and BHARs in the first 12 months.

Ritter (1991) argues that companies listed in 'hot' periods perform considerably poorer in a period of up to 3 years following their listing than other companies. In his opinion, these results call into question the informational efficiency of the IPO market and provide evidence concerning the Schiller (1990) hypothesis that equity markets in general and the IPO market in particular, are subject to fads that affect market prices. He concluded that markets and in particular IPOs are affected by investors' high expectations. Kringman, Shaw and Womack (1999) also argue that 'extra hot issues' underperform the rest of the IPOs in the long-run. Looking at table 6a one can observe that CARs in 1999 are worse than the average of the period for all three time periods (12-, 24-, and 36-month periods).

The above empirical evidence is in line with the majority of academic literature, whereby, IPOs underperform in the long term. For example, in the US, Loughran and Ritter (1995), Brav, Geczy and Gompers (2000), Ritter and Welch (2002), Ritter (1991), Clark (2002). In Canada, Jog and Shrivastava (1995), Kooli and Suret (2002), the UK, Levis (1993), Khurshed, Mudambi and Goergen (1999), Austria, Aggarwal, Leal and Hernandez (1993), Brazil, Aggarwal, Leal and Hernandez

(1993), Germany, Ljungqvist (1997), Japan, Cai and Wei (1997), China, Su (2004), Poland, Aussenegg (2000), Singapore, Hin and Mahmood (1993), Finland, Keloharju (1993) and Chile, Aggarwal, Leal and Hernandez (1993).

iii. Definition of the independent variables

In this section a description of the independent variables employed in the regression model is given together with explanatory notes regarding their hypothesised relationship with the dependent variable(s). The independent variables are grouped into four (4) categories namely:

1. Advisor/issue certifier specific.
2. Market and institutional specific.
3. Issuer specific.
4. IPO specific.

The reason for this classification is to emphasise the effect of each group of variables on the dependent variable and provide a distinctive and at the same time-collective categorisation for the explanatory power of each variable. The independent variables are classified as follows:

1. Advisor/issue-certifier specific variables

$x_1 =$ Underwriter/Investment bank reputation (binary variable) (UND_i)

$x_2 =$ Auditor reputation (binary variable) (AUD_i)

2. Market and institutional specific variables

$x_3 =$ The natural logarithm of the number of days from application date to listing date ($LNTAL_i$)

$x_4 =$ The standard deviation of raw returns that an IPO company registers the first twenty-one (21) days of listing ($STDRTNS_i$)

3. Issuer specific variables

$x_5 =$ The issuer operational age as measured by the natural logarithm of the number of years of incorporation to the IPO date ($LNAGE_i$)

- x_6 = The percentage of shares retained by pre-IPO shareholders ($OWNER_i$)
- x_7 = The bank debt to shareholders' funds ratio of the firm based on last audited accounts in the prospectus ($LEVER_i$)
- x_8 = is the return of equity of the IPO firm as calculated by the audited profits after tax of the year before listing and the shareholders' funds (net assets) (ROE_i).
- x_9 = is the natural logarithm of the average pre-tax profits (or losses) for the last three years before the firm's listing ($LNPBT_i$).
- x_{10} = is the sales growth exhibited by the IPO firm the year before the listing and the year before that ($SGROWTH_i$).

4. IPO specific variables

- x_{11} = The size of the issue as measured by the natural logarithm of gross proceeds ($LNGPR_i$) (no. of shares sold times the offering price).
- x_{12} = Whether the prospectus of the IPO firm contains projections ($PROJ_i$) (dichotomous or binary or dummy variable).
- x_{13} = The offering price of the IPO ($OFPR_i$).
- x_{14} = The participation of the underwriter in the IPO firm's equity capital ($UNDPRT_i$) before the offering (dichotomous or binary or dummy variable).
- x_{15} = is a variable denoting the total direct costs (expressed as a percentage of the total funds raised) incurred for listing ($ICOSTS_i$).

Advisor/issue-certifier specific variables

UND_i is a *dichotomous (binary or dummy)* variable taking the value of one (1) if the underwriter is one of the three (3) reputable underwriters in the sample, and zero otherwise. Reputable underwriters are categorised according to the combination of the following three parameters: (a) they are subsidiaries of the largest commercial banks in Cyprus and consequently the best capitalised in the market (Michaeley and Shaw (1994) (b) the number of public offerings each of them has dealt with during the period of the sample (Agathee et al (2012), (c) the total market capitalisation of the IPOs listed, (d) their years of operating in the market (and their prior experience with listings) and (e) the number of clients that they have. Taking into account the above, a measure is constructed of underwriter reputation similar to Banerjee et al. (2011) which is decile-reputation rank of underwriters' market share over the period 1997 to 2002. Taking in mind all the above considerations, three financial services

firms (Laiki Investments, CISCO and Hellenic Bank (Investments)) among fourteen (14) are found to be the prestigious underwriters in the Cyprus Market. These three underwriters together have listed 49.4% of the total number of IPOs in the sample which correspond to 85% of the sample's total gross proceeds. Ljungqvist, Nanda and Singh, (2006) argue that more experienced banks that are more active in the IPO market can obtain investors' co-operation easily than less active underwriters, due to higher reputation.

Beatty and Ritter (1986), Beatty and Welch (1996) and Carter et al (1998) report that a prestigious underwriter can help the issuer achieve a higher price for its shares, which means accepting a smaller IPO discount than the average i.e., reputable underwriters are associated with smaller underpricing and higher longer run performance. Nanda and Yun (1997) and Chemmanur and Paeglis (2005) point out to the sensitivity of underwriters' reputation in overpricing IPOs, thus yielding negative first day returns.

Results are, however, highly sensitive to the period studied. Beatty and Welch (1996), who use data from the 1990s, show that the sign of the relation between underwriter reputation and initial returns has flipped since the 1970s and 1980s, such that more prestigious underwriters are now associated with higher underpricing sparking an on-going debate about the causes of this shift. Habib and Ljungqvist (2001) argue that part of the 'shift' in the relation between prestigious underwriters and underpricing may be due to endogeneity biases and taking into account these biases the sign flips back to being negative even in the 1990s. Carter, Dark and Sapp (2010) study a sample of 6,686 IPOs over the period 1981 to 2005. They find that the IPOs marketed by the more reputable underwriters were more likely to fail or be failing in the post-1980s period, but were still better than those of less reputable underwriters. They also find that the characteristics of the firms marketed by more reputable underwriters did not appear to change substantially from decade to decade.

***H₀₁:** It is hypothesised that prestigious underwriters are associated with lower underpricing i.e., a negative (positive) relationship between this variable and first day IPO returns (long term returns) exists.*

AUD_i is also a *dichotomous (binary or dummy)* variable taking the value of one (1) if the auditor is one of the big five⁵¹ reputable auditors, and zero otherwise. In total, twenty seven (27) accounting firms participate in the sample, but the big five audited 57% of the total sample. According to Michaely and Shaw (1995) the ability of a firm to convey quality through the selection of the auditor is similar to that of the selection of the firm's underwriter. Carpenter and Strawser (1971) document that a significant number of US firms going public switched from a regional to a 'nationally known' auditor. Menon and Williams (1991) find evidence that generally supports the hypothesis that investment bankers and their clients have a preference for credible auditors for the IPO. Investment bankers have a preference for credible auditors since they rely on audited financial statements in certifying the value of the firm and determining whether to underwrite the offering (Balvers, McDonald and Miller (1988)). Beatty (1989) provides support that there is an inverse relationship between auditor reputation and IPO initial return. Also, Titman and Trueman's model (1986) implies a negative relationship between audit quality and the riskiness of new issues. Hogan (1997) finds evidence from a sample drawn during the early 1990s that there is a benefit in hiring a reputable auditor in reducing the extent of underpricing. Balvers, Mcdonard and Miller (1988) found that IPO underpricing is inversely related to auditor reputation. They suggest that the use of prestigious auditors (and underwriters) reduce the information asymmetry problems between issuers and potential investors by adding credibility to a firm's financial statements and signalling low risk to investors in the secondary market.

H₀₂: It is hypothesised that a negative (positive) relationship exists between auditor reputation and first day IPO returns (long term performance).

Market and institutional specific variables

$LNTAL_i$ is the natural logarithm of the time period (in days) 0from the date of application to the date of listing on the CSE. Loughran *et al* ((1994), (table updated

⁵¹ The big five accounting firms at the time were PricewaterhouseCoopers (PWC), Ernst and Young (EY), Deloitte and Touche (DT), KMPG and Arthur Andersen. After Enron filed for Chapter 11 bankruptcy protection on 3rd of December 2001, Arthur Andersen imploded following the admission in front of US Congress by its CEO that Arthur Andersen made an error with Enron's audit. It was barred from conducting audits after August 2002. Eventually, the Arthur Andersen audit business was bought by Deloitte and Touche.

in March 2013) suggest that the longer the time period between setting the offer price and listing, the greater will be the underpricing level, conditional on the offer not being withdrawn. Chowdhry and Sherman (1996) report that the time between the IPO announcement day (that is, the date of prospectus) and the first day of market trading affects the underpricing level. Su and Fleisher (1998) find a positive relationship between the average initial returns of IPOs and the time gap between issue and flotation dates in their sample for the Shanghai Stock Exchange. Uddin (2008) in examining Malaysian and Singaporean IPOs (2008) finds that the listing time lag is an important factor in explaining IPO initial returns. Tian and Megginson (2005) find that time lag in Chinese IPOs is one of the factors explaining extreme underpricing observed in Chinese IPOs.

The longer the time of floatation, the more uncertainty is associated with the offer. However, it could be argued that the same variable is a proxy for the available information for a new issue given the fact that the longer the time delays the more the information diffusion to the investor public. In other words, the increase of available information reduces the probability of wrong risk appraisal concerning the issue and as result the need for underpricing becomes less (How, Izan and Monroe (1995) and How and Howe (1994)).

As it has already been mentioned, the CSE demanded from issuers and underwriters alike, that the price of the offering was fixed at application submission. The great majority of the firms that went public, especially over the period 1999-2002, undertook private placements as soon as they submitted their application to the authorities (sometimes even before, utilising a window of the law⁵²). The private placement in many cases constituted the bulk of the funds raised. Thus, many investors were locked in for a long period of time including the underwriters, which usually invested in the private placements of their IPO-firm clients. As time was passing by, more info became available to investors, the market changed direction

⁵² *The Companies' Act, Ch.113, allowed companies to issue new shares to investors and collect the monies, by submitting an information memorandum to the Registrar of Companies office. This Information Memorandum did not abide by CSE laws and regulations. Later on, they just filed a prospectus with the CSE in order to list these shares in the CSE. Alternatively, they could also apply for an IPO regulated by the CSE/CySEC authorities, therefore issue effectively twice to investors.*

and the initial excitement subsided. One could argue that this extensive time lag alleviated the winner's curse from many IPOs as more investors were becoming aware of information that was not available at the time of filing (e.g., financial results, results of private placement, quality of management, etc.). One could also argue that the initial excitement slowly eroded.

H₀₃: It is hypothesised that a negative (negative) relationship between time span of application for listing date to actual listing date and first day IPO returns (long term returns) exists.

STDRTNS_i is the standard deviation of raw returns that an IPO firm registers the first twenty-one (21) days of listing. This variable is a measure of *ex-ante* risk and has been tested extensively in the literature (e.g., Ritter (1984) and (1987), Clarkson and Merkle (1994), Finn and Highan (1988), Prabhala and Puri (1999), Kazantzis and Levis (1995), Kazantzis and Dylan (1996), Aussenegg⁵³ (2006), Gotzageorgis (2004), and Wasserfallen and Wittlader (1994)).

H₀₄: It is hypothesised that a positive (negative) relationship between this variable and first day raw IPO returns (long term returns) exists.

Issuer specific variables

LNAGE_i is the natural logarithm of one plus the operating history of an IPO firm prior to going public. Firm age is a firm-specific control variable that measures the difference between the foundation year of the firm and the year of introduction. Ritter (1984) argues that there is a positive relationship between the level of underpricing and the *ex-ante* uncertainty about the value of the firm. Older firms have a longer history and have more information available to the public. They have a longer track record of published financial data and are more likely to be screened by financial intermediaries and financial press. Overall, older firms create less *ex-ante* uncertainty about firm value and the level of underpricing will therefore be lower for older firms. This is empirically confirmed by Su and Fleisher (1999), Loughran and

⁵³ Aussenegg employs 42 days instead of 21.

Ritter (2004) and Chahine (2008), who all find a negative relationship between firm age and the level of underpricing.

H₀₅: It is hypothesised that there is a negative (positive) relationship between the level of first day returns (long term returns) and the age of the company.

OWNER_i, measures the percentage of shares retained by *pre*-IPO shareholders. Wasserfallen and Wittleder (1994) call it the ‘insider retention ratio’ and they posit that the higher this ratio the higher the willingness of the former owners to carry the risk of the firm after the IPO. Allen and Faulhaber (1989) report that one can see the best information about a company’s future prospects by the fraction of shares given by owners after the IPO. Grinblatt and Hwang (1989), Hansen and Torregrosa (1992) extend the above study and find an inverse relationship between the proportion of shares given by owners and the initial average returns. Hingorani *et al* (1997) in a study for the Czech firms suggest that low given holdings by insiders can signal that the firm possesses valuable assets. According to them, ‘insiders by virtue of their international advantage are more likely to own shares of companies when they expect the firm to generate high returns’. Bradley and Jordan (2001) argue that the smaller the number of shares that a company is allocating to investors in an IPO, then the higher the first day returns, reflecting the demand imbalance that would be created in the primary market. Jain and Kini (1994) find a positive linear relationship between ownership and the change in firm performance. The more shares the owners retain, the better the firm performance and consequently, this would reflect in the share performance. Clarkson, Dontoh, Richardson and Sefcik (1991), suggest that the retained proportion of ownership of an IPO is a signal to potential investors regarding management’s faith in future returns. They find a negative relationship between IPO underpricing and retained ownership. Conversely, an earlier study by Beatty (1989) failed to find the same relationship for US IPOs. Also, Chen and Strange (2004) find that underpricing is negatively related to equity retention for the Chinese market.

H₀₆: It is hypothesised that there is a negative (positive) relationship between ownership retention rates with first day IPO returns (long term returns).

LEVER_i is the ratio of bank debt to shareholders' equity ratio of an IPO firm based on the last audited accounts in the prospectus. The higher the debt to equity ratio, the greater is the implied ex-ante risk of the IPO firm and therefore the greater the returns. Riskier firms tend to have a large debt to equity ratio (>50%).

H₀₇: It is hypothesised that there exists a positive (positive) relationship between the debt to equity ratio and first day IPO returns (long term returns).

ROE_i is the return of equity of the IPO firm as calculated by the audited profits after tax of the year before listing and the shareholders' funds (net assets). Wasserfallen and Wittleder (1994) argue that return on net worth is a measure of the firm's quality related to ex ante uncertainty. Firms with high ROEs are also expected to perform better in the long term than firms with poor ROEs.

H₀₈: The higher the return of equity the lower the ex-ante uncertainty and the lower the first day returns (negative relationship). The higher the return on equity, the better the long-term price performance of the IPO firm i.e., a positive relationship is hypothesised.

LNPBT_i is the natural logarithm of the average pre-tax profits (or losses) for the last three years before the firm's listing. This is again a variable which assumes a better quality firm the higher the profits are. The profits are averaged so that any possible earnings 'management' effects are smoothed out. This variable has been employed also by Khurshed et al (1999).

H₀₉: The more profitable a company is before listing, the lower its ex ante uncertainty and therefore the lower is the first day return (underpricing) i.e., it is hypothesised that a negative relationship exists with first day returns. The higher the firms profitability the better is its long-run performance after the IPO i.e., it is hypothesised that a positive relationship exists between the two variables when it comes to long-term returns.

SGROWTH_i is the sales growth exhibited by the IPO firm the year before the listing and the year before that. Smith and Watts (1992) argue that high growth companies

have lower levels of bank debt and this is due to the fact that they are deemed as risky by bankers. On the other hand, high growth companies may be deemed by investors and underwriters alike as having better prospects and therefore, less risk.

H₁₀: It is hypothesised that a positive (negative) relationship exists between the sales growth of the IPO firm and its first day returns (long term share price performance).

IPO specific variables

LNGRP_i is the natural logarithm of the gross proceeds of the issue (i.e., the issue price times the number of shares offered in the IPO) used as a proxy for ex-ante uncertainty. (Miller and Reilly 1987), (Clarkson and Simunic 1994) and (McGuinness 1992) use the total gross proceeds raised from the offer as a proxy for ex-ante IPO uncertainty. Ritter (1984) and Ibbotson and Ritter (1995) provide support for a negative relationship between the size of an issue and the size of the firm and the initial premium. Further, Beatty and Ritter (1986) argue that the smaller the offering the more risky the company and the higher the degree of the uncertainty for high initial premium.

H₁₁: It is hypothesised that a negative (positive) relationship between the size of the issue and first day IPO returns (long term returns) exists.

PROJ_i is a dichotomous variable which takes the value of 1 if financial projections are included in the prospectus of the IPO firm and 0 if there are no projections. IPOs worldwide use prospectuses to publish financial forecasts based on their management's confidence in an accurate prediction. Disclosure of management earnings forecasts is optional in many markets as was in the CSE over the period of the sample. Again this is a variable that tests the ex-ante risk of the issue (Clarkson and Merkley (1994)).

H₁₂: It is hypothesised that where management earnings forecasts are disclosed, underpricing will be less. It is also hypothesised that a positive relationship between this variable and long term returns.

OFPR_i denotes the corresponding euro value of the offering price of the IPO. Fernando, Krishnamurthy and Spindt (2004) argue that new listings that take place with a small offering price deter institutional investors whilst attracting retail investors (contrary to those which are listed with a relatively high offering price). Underpricing is then employed to reward these investors (retail) for the information that they provide to underwriters during the pre-marketing of the issue. Tinic (1988) employed the offering price as a variable to demonstrate his ‘legal avoidance hypothesis’ in that smaller (and riskier) companies tend to use small offering prices. On the other hand, Blume and Husic (1973) and Miller and Scholes (1982) argue that the offering price can predict the future share returns at least as well as the beta coefficient. Therefore, the smaller the offering price the higher the risk and the greater the long term returns. Fernando, Krishnamurthy and Spindt (2002) find that institutional ownership rises (and retail ownership declines) with the IPO price level, lending support to a prediction from prior studies that retail investors prefer low prices and institutional investors prefer high prices. Neupane and Poshakwale (2012) argue that in India, where the pricing mechanism is transparent, underwriters set the IPO prices high in the presence of favourable uninformed demand and positive general market conditions. The majority of the investors in the CSE were retail investors and this is something that underwriters knew well.

***H₁₃**: It is hypothesised that a negative (negative) relationship between the offering price of an IPO and the first day returns (long term returns).*

UNDPRT_i is a *dichotomous* variable which takes the value of 1 to denote that the main underwriter(s) participates in the capital of the IPO firm before this is listed. The participation of an insider in the equity capital of the IPO company gives comfort to investors and this has an effect of decreasing the ex-ante risk profile.

***H₁₄**: It is hypothesised that a negative (positive) relationship between this variable and first day IPO returns (long term returns) exists.*

ICOSTS_i is the variable denoting the total direct costs (expressed as a percentage of the total funds raised) incurred for listing. The costs of floatation include underwriting fees, accounting fees, legal fees, auditing fees, printing and regulators

fees. Khurshed et al (1999) hypothesise that with higher IPO proceeds, the quality of the IPO firm becomes better (because larger IPOs are often made by more established firms and so there is less risk about the true quality of the firm) and hence the proportion of costs of the funds raised decreases.

H₁₅: The higher the cost of floatation expressed as a percentage of the funds raised, the worse is the quality of the IPO firm the higher is the risk and therefore the higher is the first day return. Also, the higher the costs of floatation as a percentage of the funds raised, the worse is the long-term performance i.e., it is hypothesised that a positive (negative) relationship between the two variables exists.

Table 7 below summarises the variables that are employed in the regression models and their expected relationship (sign) with respect to first day raw returns and CARs.

Insert table 7 – Variable expected signs in regression models

iv. Descriptive statistics

Table 8 below shows the descriptive statistics for the independent variables as these are described in (ii) above.

Insert table 8 – Descriptive statistics for independent variables

The mean offering price of the 79 IPOs in the sample is estimated at €1.06 (which corresponds to Cyprus Pounds £0.62) and the median is €0.85 (which corresponds to Cyprus Pounds £0.50 – which is the price mostly employed by the IPO firms during the period examined). The standard deviation is €0.68 (Cyprus Pounds £0.40), the maximum price is €5.13 (Cyprus Pounds £3.00) and the minimum price is €0.31 (Cyprus Pounds £0.18). These offering prices in US IPOs would be classified as ‘penny stocks’ which are riskier than conventional IPOs.

The mean gross proceeds from the IPO sample firms in the Cyprus Stock Exchange over the period 1997-2002 is €8.1 million with a standard deviation of €14.4 million.

This size of issues is obviously much smaller than the mean of gross proceeds of European IPOs and much smaller than that of US listings.

The average age of the IPO firms at the date of listing is 17.4 years and the median is 14 years with a standard deviation of 11.2 years and a maximum and minimum of 56 years and 4 years respectively. The median age of Cypriot IPOs is closer to the European average and higher than the US IPOs average age. Ritter (2003b) reports that, before the 1990s, firms going public in Europe, especially continental Europe tended to be much older than those going public in the USA. For example, Vandemaele (2003) reports a median age of twenty-eight (28) years for 220 IPOs on the French Nouveau Marche between 1984 and 1995 compared with the median age of seven (7) years reported by Loughran and Ritter (2002) for 6,149 US IPOs from 1980 to 2000. Even with the explosion of internet and technology-related firms going public in the 1999–2000 period the median age of European firms going public is higher than that in the USA. Schuster (2003) reports a median age varying from 13 years in France to 31 years in Spain for IPOs from 1988 to 1998. Giudici and Roosenboom (2002) report a median age of 13 years for 1,007 European IPOs during 1995–2001, whereas Ljungqvist and Wilhelm (2003) report a median age of seven years for 2,178 US IPOs during 1996–2000.

CSE IPOs employ the fixed price method of setting the price of the offering. By fixed price mechanisms, one refers to contracts where the offer price is set relatively early, before much information about the state of demand is known. Loughran et al. (1994) shows that this tends to result in a high level of underpricing. Fixed price offerings have become uncommon in recent years in many European countries (Ritter (2003b), Gajewski and Gresse (2006) and Boutron et al. (2007)). The use of fixed price mechanisms combined with the long period from application to listing obviously results in rising market risk which in effect, is unloaded upon the underwriters⁵⁴.

⁵⁴ *The Cyprus Stock Exchange demanded that every IPO application included a priori the offering price of the IPO and a brief valuation note. No application was accepted without a hard quoted offering price and this could not change later on. Underwriters had no means of hedging their risk since the offering could not be recalled, and short-selling was not allowed (no mechanism existed).*

Therefore, apart from the mean number of days between last day of offer and listing, one needs to examine also the average number of days from application to actual listing. The average number of days from last day of offer to listing is 28 with a median of 26 and standard deviation of 13 days. The maximum is 105 days and the minimum 14 days. In the US, this time period is typically a few hours⁵⁵ whereas in Greece the average is 35 days with a standard deviation of 12 days (Gotzageorgis (2004)). The mean number of days from application to actual listing is 319 days with a median of 252 days and a standard deviation of 208 days. The maximum and minimum are 1016 days and 54 days respectively. This time span rises as time goes by i.e., as applications were rising in number so was the number of days demonstrating the bottleneck that was being created at the approving authorities (see fig. 7).

The mean percentage of ownership held by the initial owners of a CSE IPO firm in the sample is 65.7% with a median of 68.3%, maximum of 75%. minimum of 38% and standard deviation of 6.9%. This demonstrates that Cypriot owners on average, kept the control of their firms at reasonably high percentage levels.

Prestigious underwriters as per definition given above, underwrote on average 49.4% of the sample IPOs, and the big five auditors audited on average 57% of the sample IPOs. Underwriter participation in CSE IPO firms prior to their listing is extensive, with the mean participation level at 78.5%. Also, the majority of the firms in the sample are using financial projections in their prospectuses with the mean number of firms reaching 55.7%.

The mean (bank) debt to equity (Leverage) of the IPO firms in the sample stood at 88.6%, with a median of 64.4% and a maximum and minimum of 358.9% and 0% respectively.

The IPO firms in the sample had a mean standard deviation of returns during the first 21 days of listing of 19.1%, with a median of 8.3%, a maximum of 138.2% and a minimum of 0%, demonstrating the high levels of volatility that existed.

⁵⁵ *The pricing meeting between the IPO firm and the underwriters usually takes place during the afternoon before the day of listing.*

The mean direct costs of the issue of a CSE IPO firm stand at 6.5%, with the median at 5.4% and maximum and minimum at 45% and 1.3% respectively.

The mean return on equity for the sample is 37.9% with a median of 22.8%, a maximum of 733.9% and a minimum of 0%. The average profit before tax of the three years prior to listing is €1.05 million, with a median of €545.8k and a maximum and minimum of €9.78 million and €44.2k respectively.

The mean growth in revenues exhibited by the IPO firm between the year before the listing and the year before that stands at 81.8%, with a median of 25.1% and maximum of 2,484.3% and a minimum of 0.6%. The mean size (turnover) of the CSE IPOs over the period 1997-2002 in the sample is €13.76 million with a median of €6.96 million, a maximum of €104.56 million and a minimum of €151.60k. The average size in terms of total assets was found to be €17.82 million, with a median of €7.92 million, a maximum of €119.46 million and a minimum of €447.60k. The size variable and the age variable are employed in several academic studies as ex-ante risk proxies for IPOs.

v. *Comparison of key variables with other studies*

Table 9 below shows some descriptive statistics for the sample of 79 IPOs over the period January 1997 and December 2002 (a period of six years) compared with other countries and regions. Consistent with previous studies (e.g., Gounopoulos et al (2008)), Cypriot IPOs are on average underpriced. What is remarkable though, is the level of both raw (unadjusted) and adjusted underpricing, which stands at 124.25% and 129.20% respectively, which is the highest observed in a European Country and certainly one of the highest in the world as it can also be compared from the table shown in appendix A.

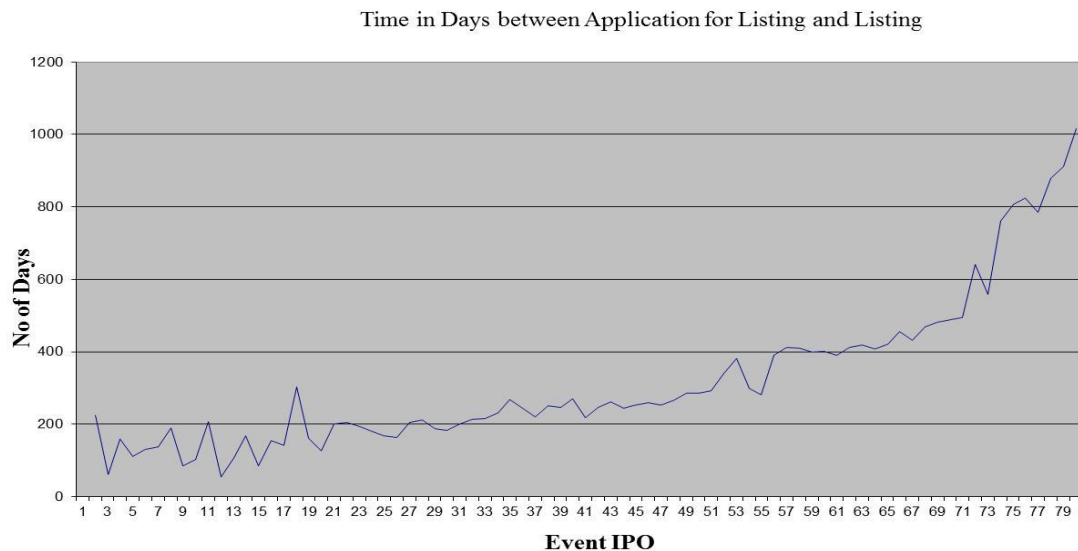
Insert table 9 – Selected descriptive statistics

The median raw underpricing is 17.86% demonstrating that the positive skewness of the distribution of first day's returns, is also consistent with other studies (see Appendix A). The maximum return is also astonishing (1226%). If 23 IPOs with

returns that are greater than 200% are excluded, then the mean raw initial return and mean adjusted initial return stand at 22.95% (median 3%) and 28.73% (median 11.38%) respectively⁵⁶. If 10 IPOs are excluded from the sample with initial raw returns over 300% then the average first day raw and adjusted returns drop to 45.58% (median 7.12%) and 50.91% (median 14.24%) respectively, which is still one of the highest in Europe.

The median age of the IPOs during the period examined is 14 years which is ‘younger’ than other European IPOs, but ‘older’ than U.S. IPOs⁵⁷. The mean gross proceeds are €8.1 million (CY£4.74 million⁵⁸) whilst the median gross proceeds are €3.6 million (CY£2.1 million). This indicates that the size of IPOs in the CSE is much smaller than both European and US IPOs.

Fig 7 – Number of days required from application to approval of prospectus of CSE IPOs



Source: CSE, the author

⁵⁶ Ritter et al (2013) in their citation for CSE IPOs of Gounopoulos et (2006) exclude a number of IPOs that raised less than US\$1 million in order to arrive at an ‘adjusted’ mean first-day return of 23.7%.

⁵⁷ According to Ritter (2003b), before the 1990s firms going public in Europe, especially continental Europe, tended to be much older (median 28 years) than those going public in the U.S. (median age 7 years). Even with the Internet boom (1999-2000), the age of an IPO in Europe is still high (median of 13 years in a sample of 1007 European IPOs from 1995 to 2001) compared to the U.S. (median of seven years for a sample of 2,178 IPOs during 1996-2000).

⁵⁸ All IPOs in the sample raised new equity in Cyprus Pounds. Cyprus entered the Eurozone on the 1st of January 2008 with an official parity of 1€=CY£0.585274.

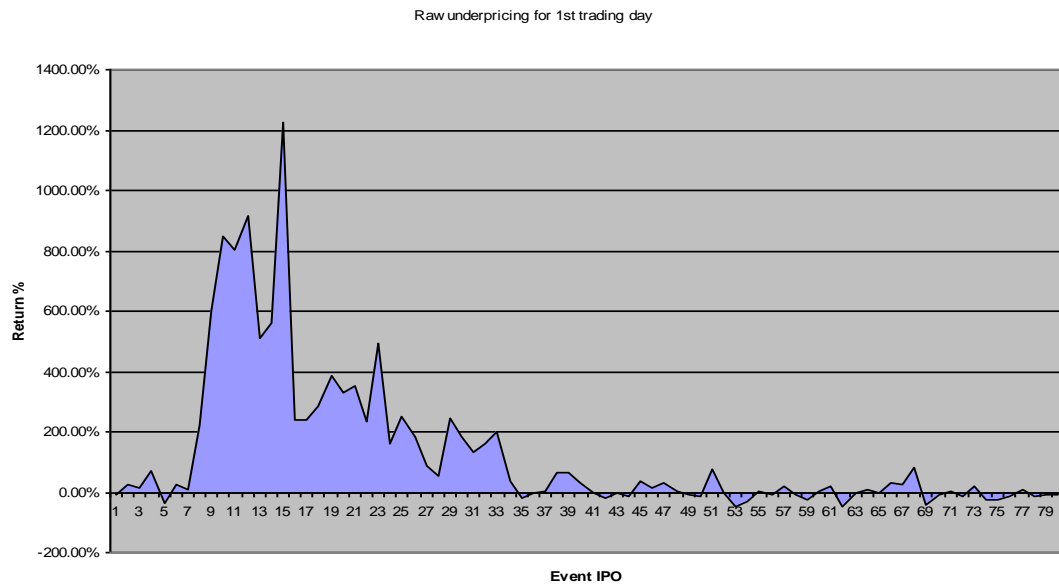
What is quite notable though is the time span required for listing approval⁵⁹. The mean time is 319 days (almost one calendar year) and the median is 252 days. Also, the average time between applying for a listing and approval of the prospectus is 276 days which represents 9 months of waiting time with the minimum and maximum being 23 days and 982 days (almost 2.7 years). The time for approval rises as time progresses in the sample reflecting the inefficiencies of the institutional setting and the authorities' inability to deal effectively with the backlog of applications that piled up especially during Q1 of 2000.

Looking at table 9, this time span is probably the longest on record and obviously is a factor that must be taken into account when trying to examine underpricing of IPOs in the CSE (see figure 7)⁶⁰. Moreover, the time between the last day of offer and listing is comparatively long at 28 days (median of 26 days), with a minimum of 14 and a maximum of 105 days. The average time increases year after year after 1999 reaching 41 days in 2002. This means that underwriters and investors undertake on average a whole month of market risk before being able to offload the shares from an IPO. Given the volatility of the CSE at the time and the fact that underwriters were not allowed to exercise market making operations (e.g., Greenshoe option), nor did they have any other means of hedging their risks (such as short selling or financial options) such period of time is long enough to expose all parties to the whims of a highly volatile market with all the (negative) consequences that such a market may have. In this respect, Cyprus offers a unique setting to study the CSE IPO phenomenon given the inefficient institutional framework that existed at the time, the CSE small size and young age.

⁵⁹ *This period represents the time from official application for listing on the CSE to the first day of listing.*

⁶⁰ *Uddin (2001) found that IPO stocks in Malaysia are listed about 119 days after filing the offer price while in China is about 305 days (Tian and Megginson (2006)).*

Fig 8 – First day performance of CSE IPOs 1997-2002



Source: CSE, the author

There are a few more interesting observations that can be made from tables 8 and 9. The return on equity of CSE IPOs is quite high. Specifically, the mean return on equity for the sample is 37.9% with a median of 22.8%. Moreover, CSE IPO firms seem to exhibit very high revenue growths the year prior to the IPO. In particular, the mean sales/revenue growth figure is 81.8% with a median of 25.1%. Also, IPO firms seem to be relatively levered, with mean leverage ratio (bank debt to shareholders' funds) at 88.6% (median of 64.4%). The mean offering price is €1.062 (or CY£0.62) and a median of €0.854 (or CY£0.50). CSE IPOs in general, employed low offering prices in order to produce more shares for liquidity purposes and lure more retail investors.

In table 10 below, IPOs are segmented depending on the time of their floatation, their gross proceeds and their age.

Insert table 10 – Selected descriptive statistics

Looking at Panel A of table 10 above, one could yield three important conclusions, namely, (1) new listings generated much higher average initial returns during 1999 than in 2000, (2) as time goes by, the magnitude of initial returns decreases

considerably, and (3) the level of adjusted mean initial returns remains positive for 2001 (unlike raw returns that becomes negative for the rest of the period).

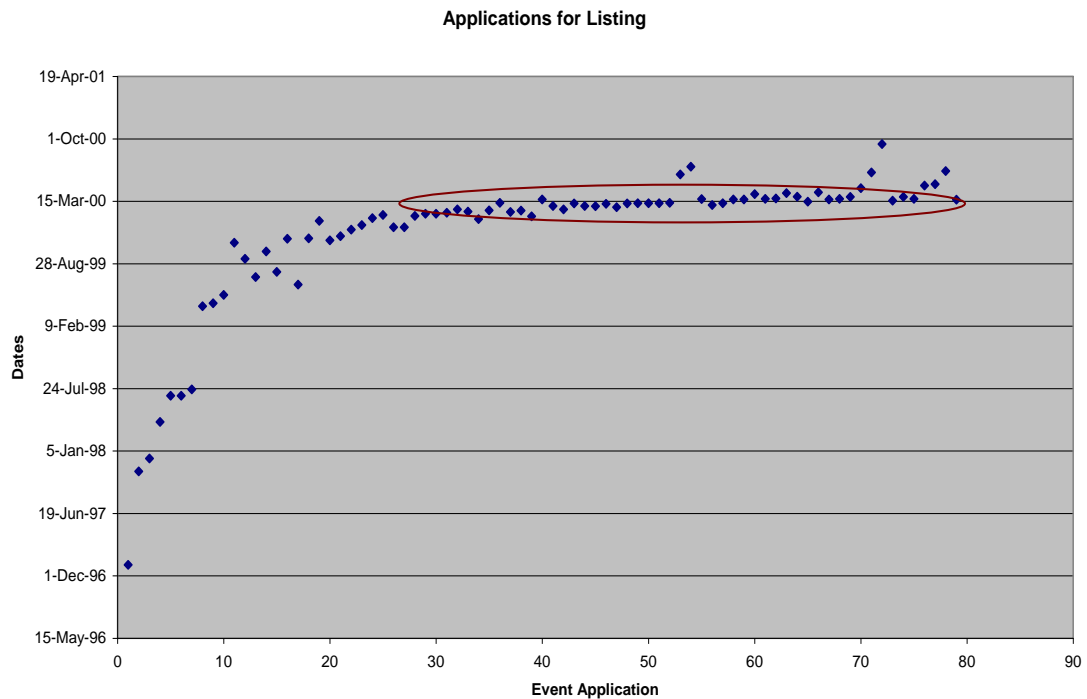
The momentum in (abnormal) first day adjusted returns that started in 1999 was enough to last for 3 years (1999-2001). It is interesting to note that all companies that were listed over the period 1999-2002 filed their applications for listing over the period 1999-2000. No firm that was eventually listed in the CSE over the sample period filed for an IPO after September 2000⁶¹. Specifically, 29% of the companies in the sample filed for an IPO in March of 2000. This could be an indication that Cypriot enterprises observed a window of opportunity opening up in the CSE and/or it could also be related to the fact that in October 2000, new stricter laws and regulations that amended the existing CSE legislation were introduced⁶².

These were laws/regulations that had to do mainly with private placements and the placement of shares to investors prior to an IPO. The laws/regulations made it much harder for companies to collect funds pre-IPO (so called ‘private placements’). Thus, as the secondary market of the CSE was deflating much faster than the primary market, investors that received private placements of shares in IPOs (the primary market) were ‘protected’ from this rapid decline, and actually made a positive (adjusted) first-day return relative to the General Index up to and including 2001. However, as the liquidity was drying out fast from the market, the returns in the primary market began to catch up with the secondary market and eventually they tumbled.

⁶¹ *In September 2000, market sentiment began to change rapidly in a negative manner.*

⁶² *These laws were being prepared before October 2000. Actually, the Cypriot parliament closes in June and opens up in October every year. Therefore, most probably, it was known to certain circles that stricter rules would be enforced in the capital markets.*

Figure 9 – IPO Applications for Listing across time



Source: CSE, the author

Figure 9 above demonstrates that there was clearly a ‘window of opportunity’ that companies took advantage of in the CSE at the time. The clustering of applications during the first quarter of 2000 is commendable.

In Panel B of table 10, IPOs are segmented according to their Gross Proceeds which is a proxy for their size. Close inspection of table 10, Panel B discloses that if one excludes the very small IPOs (less than €1.0 million in gross proceeds), a negative relation exists between size and return: the higher the gross proceeds are, the lower the magnitude of first day returns becomes. Moreover, the standard deviation of raw initial returns declines with rising size (excluding the bracket of less than €1.0 million in gross proceeds) meaning that risk is reduced as size increases.

In Panel C of table 10, IPOs are segmented by Age which is the number of years the company has been in operation before the year of listing. Companies which approach the capital markets to raise external equity capital at an early stage of their life cycle are considered more risky than firms which have been in operation for a longer time. The results are consistent with expectations. Firms that have been in

operation for 8 years or less, report the highest initial return (231.01%), whereas the lowest degree of underpricing is observed by firms which have been in operation for over 35 years (31.4%). The standard deviation of first day returns also becomes less and less as the age of the IPO firms rises, indicating that the variability in returns becomes smoother and so is the valuation uncertainty of the corresponding IPO firms (risk is decreasing with rising age).

Table 11 below reports initial return measures for IPOs segmented by industrial sector. As indicated, the firms going public during the sample period are not evenly distributed amongst the various industrial sectors. Trading, Manufacturing and firms classified in the 'Others' sector are heavily represented (59% of the sample) compared to the other sectors. As table 11 reveals, there is a cross-sectional variation in the initial performance of IPOs amongst different industries. All industrial sectors except Building Materials and Construction Companies (-11.1%) and Hotels (-23.9%) generate considerable positive first day average returns. In particular, Fish Culture IPO firms generate the highest mean first day returns (597.5%), followed by firms in the Information Technology sector (428.3%), whereas, new issues in Insurance Companies sector generate the lowest positive return (5.0%).

Insert table 11 – Descriptive statistics by industrial sector

In table 12 below, the correlations for all the variables are shown together with the associated t-statistic and the corresponding probability (p) and in table 13 the covariance matrix for the coefficients of the regression is shown.

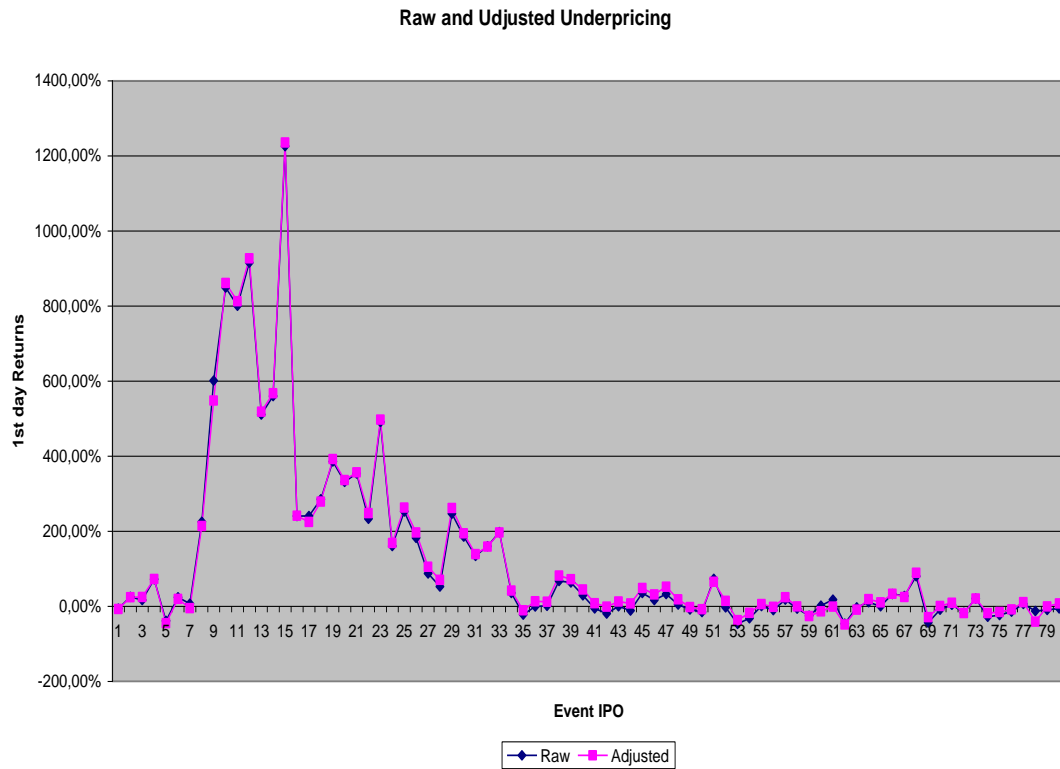
Insert table 12 – Correlation table

Insert table 13 – Covariance coefficients

As figure 10 below shows, IPOs 8 to 33 enjoyed uninterrupted abnormal first day returns. Time-wise, this happened between July 1999 and September 2000 listings. The market then began to display signs of fatigue which accelerated in the last

quarter of 2000 and through 2001 and 2002. No firm that was eventually listed over the period 1997-2002 applied for a listing after September 2000⁶³.

Figure 10 – Raw and adjusted return for CSE IPOs 1997-2002



v. *Long-run returns*

Table 14 below shows how CARs vary with gross proceeds. 12-month CARs are positive across all gross proceeds brackets. Two years after the IPO, 24-month CARs become negative with the exception of the bracket €1.0 million < GP < €3.0 million. Three years after the IPO, all CARs are negative. The worst performers in years 2 and 3 in terms of CARs are the smaller issues, namely those IPOs with less than €1.0 million in gross proceeds. The medians of the larger bracket IPOs in terms of gross proceeds (i.e., those over €10 million), despite their lower first day performance, demonstrate a better performance two and three years after the IPO than the rest of the pack.

⁶³ In fact no company that was eventually listed in CSE by December 2004 filed an application after September 2000.

Insert table 14 – CARs and gross proceeds

In table 15 below, it can be observed that 12-month CARs are the mirror image of raw initial returns i.e., the greater the age of the IPO firm, the better its 12-month CARs and the worse its average first-day raw returns are. The risk of younger IPOs is also reflected in their long term returns. The standard deviation of returns for 12-, 24-, and 36-month CARs decreases with increasing age (with a marginal increase for the ‘young adult’ group). It is also worth noting that whilst 12-month mean CARs are positive for all age groups, 24- and 36-month mean CARs are negative for all age groups.

Insert table 15 – CARs and age

Tables 16(a), (b) and (c) below show the correlations amongst the dependent and independent variables and tables 17(a), (b) and (c) show the covariance of the coefficients.

Insert tables 16 (a) – Correlations for 12 months CARs (CAR12)

Insert tables 16 (b) – Correlations for 24 months CARs (CAR24)

Insert tables 16 (c) – Correlations for 36 months CARs (CAR36)

Insert tables 17 (a) – Covariance coefficients for CAR12

Insert tables 17 (b) – Covariance coefficients for CAR24

Insert tables 17 (c) – Covariance coefficients for CAR36

VI. Regression results

In this section the empirical findings are presented, that arise as a result of applying the methodology described, in section (V) above.

A. Initial returns

The regression model (equation 1) was run for 79 observations. Table 18 reports coefficient estimates.

Insert table 18 – Results of multiple regression for raw initial returns

The model shows high prediction accuracy with adjusted R^2 (\hat{R}^2) of 83.9%. This compares favourably with other research with similar sample sizes such as Omran (2005) with $\hat{R}^2 = 63.6\%$, Hameed (1998) with $\hat{R}^2 = 58.0\%$, Hearn (2011) with $\hat{R}^2 = 45.0\%$ and Procianoy and Cigerza (2007) with $\hat{R}^2 = 54.0\%$.

Moreover, the relatively high value of the F-statistic demonstrates the statistical significance of the all the coefficients in the sample. The residuals of the sample are not normally distributed as evidenced by the Jarque-Bera test. This is expected as the raw initial returns found in this study are positively skewed, with high kurtosis (leptokurtic) (see table 8). All standard error coefficients are adjusted for White heteroscedasticity.

Centred Variance Inflation Factors (VIFs)⁶⁴ (see table 19) are calculated to demonstrate the level of collinearity that exists amongst regressors. As table 19

⁶⁴ Variance inflation factors (VIFs) are a method of measuring the level of collinearity between the regressors of an equation. VIFs show how much of the variance of a coefficient estimate of a regressor has been inflated due to collinearity with the other regressors. They can be calculated by dividing the variance of a coefficient estimate by the variance of that coefficient had other regressors not been included in the equation. There are two forms of the Variance Inflation Factor, namely centred and uncentred. The centred VIF ratio is the ratio of the variance of the coefficient estimate from the original equation divide by the variance from a coefficient estimate from an equation with only that regressor and a constant. The uncentred VIF is the same but with no constant. The centred VIF is numerically identical to $1/(1-\hat{R}^2)$ where \hat{R}^2 is the R-squared from the regression of that regressor on all of the other regressors in the equation. Usually, the critical value of \hat{R}^2 is 0.9 which means a centred VIF

shows, the centred VIFs are much lower than 10 which is cited by Kutner et al (2005) as a cut-off point.

Insert table 19 – Variance inflation factors (VIFs)

Table 18 shows the results of the multiple regression. Gross Proceeds (LNGRP), the time between application and listing (LNTAL), the ratio of bank debt to shareholders' equity (LEVER), the standard deviation of the raw returns of the first 21 days of trading (STDRTNS) and the return on shareholders' equity (ROE) are all statistically significant variables. Moreover, 11 variables are found to have the predicted sign whereas four have the opposite sign. These are the offering price (OFPR), return on equity (ROE), the natural logarithm of average profit before tax (LNPBT) and the sales/revenue growth (SGROWTH).

More specifically, the *advisor/issuer-certifier* variables (UND and AUD) are found to have a negative sign each, which is in accordance with academic literature (e.g., Megginson and Weiss (1991), Carter and Manaster (1990), and Habib and Ljungqvist (2001)), whereby prestigious underwriters and auditors are associated with lower underpricing. However, both are not statistically significant variables.

Market and institutional-specific variables (LNTAL and STDRTNS) are quite significant in the case of CSE IPOs over the period examined. Both LNTAL (p-value<0.01) and STDRTNS (p-value<0.01) are statistically significant at the 1% level. Raw returns rise as LNTAL shortens and this is in line with expectations since the shorter the time span between application and listing, the less is the dissipation of information content to investors and therefore, the greater the ex-ante risk.

STDRTNS relates positively to initial returns demonstrating its ex ante risk predictive ability i.e., IPOs with high variability in returns during the first 21 trading days following listing, reveal a higher risk-information content which translates to higher returns. The fact that this variable is so (statistically) important demonstrates that returns in the primary market were much affected by market psychology. As

of 10 (Source: Belsley, D.A., 1991, *Conditioning Diagnostics – Collinearity and weak data in regression*, Wiley, New York)

long as the IPO market returned these spectacular returns, IPOs that followed would repeat the performance until the secondary market caught up with the primary market returns.

Amongst *issuer-specific* variables, LEVER (p-value<0.05) is statistically significant at the 5% level, indicating that IPO firms with a high degree of bank debt (leverage) exhibit higher first-day returns which is in line with the ex-ante risk signalling content of this variable. Durukan (2002) finds a positive relationship, albeit not statistically significant.

Return on Equity (ROE) (p-value<0.1) is also found to be statistically significant at the 10% level. However, the sign of this variable is found to be opposite to the one predicted. Specifically, it is found to be positive meaning that the highest the return on equity, the highest the first day return. This could be the result of investors being attracted to profitable IPO firms thus creating excess demand and consequently, higher first day returns. It could also be that investors view high ROE firms as more risky and thus demand a premium return for that risk (alternatively, underwriters view high ROE firms as more risky and underprice these IPOs more especially in the absence of due diligence).

Average three-year profit before tax (LNPBT) is found to be insignificant and with the opposite sign from that predicted. The reasons could be the same as those for return on equity.

Sales growth/revenue (SGROWTH) is found to be statistically insignificant and also with the opposite sign from the predicted one. This could mean that high growth companies are deemed to have better prospects and therefore, are less underpriced.

The initial raw returns rise with a lower percentage of shareholding by the initial owners (OWNER) which is also in line with the theory of ex ante uncertainty. However, it is not statistically significant. Lee, Taylor and Walter (1996) find similar evidence. They find that industrial IPOs that have higher retained ownership are significantly more underpriced.

The age of the IPO firm (LNAGE) is also in line with its expected hypothesis i.e., the 'younger' the company, the greater its risk and therefore the higher the underpricing (negative coefficient). This variable is also found not to have any statistical significance. Jelic et al (2001) also find the same result, Kazantzis and Levis (1995), Loughran and Ritter (2002), How (1999), Kiyimaz (2000), and Chan, Wang and Wei (2003), albeit for all the above is not statistically significant.

Gross proceeds (LNGRP) (p-value<0.05) is found to be statistically significant at the 5% level amongst *IPO-specific* variables. It also verifies the ex-ante uncertainty theory. The greater the gross proceeds of an IPO, the less is the risk and consequently, the smaller the underpricing of the issue (Kazantzis and Levis (1995)).

The dichotomous variable UNDPRT coefficient has a negative sign, as hypothesised i.e., the participation of the underwriter in the IPO firm's capital before listing provides comfort to investors reducing the perceived ex ante risk and underpricing. However, the statistical significance of this variable is negligible.

The offering price (OFPR) variable coefficient is positive, which contradicts what has been hypothesised. Specifically, it shows a positive (though not statistically significant) relationship with first day raw returns meaning that the higher the offering price the greater is the underpricing. Beatty and Welch (1996) find that low priced offerings are underpriced significantly less in a sample of 823 firms over the period 1992-1994. Brennan and Hughes (1991) argue that managers with favourable private information about their firms have an incentive to split their firm's shares in order to reveal the information to investors. Applied to the IPO context, issuers might choose to set a low price to encourage information production. This information production is undertaken by intermediaries which in the case of IPOs are the underwriters. Underpricing comes as a compensation for these efforts.

Total direct costs of floatation of CSE IPOs average 6.45%. Ritter et al. (1996) using a sample of 1767 US IPOs show that average direct costs for US IPOs are 11% of the gross proceeds. Underwriter gross spreads (incl. selling and management fees) average 7.31% whilst other expenses are 3.69%. Underwriter spreads in Europe are much lower than the US. Torstilla (2003) reports spreads of 4%, 3% and 2.5% in

Germany, France and Belgium respectively. In CSE IPOs, underwriter fees comprise 25% to 40% of the total direct costs of the issue. This means that they are much lower than the US and European fees indicating the severity of the competition that exists in the sector. The variable ICOSTS is found to have the predicted sign albeit statistically insignificant.

Overall, market and institutional specific variables seem to weigh considerably on the initial returns of CSE IPOs. This is expected as the unique institutional setting of the Cypriot capital markets affected the interaction between the various parties in an IPO (advisors/certifiers, investors, issuers and the authorities alike). Moreover, the results demonstrate that advisors/certifiers had no statistically significant effect or influence on first day raw returns, as tough competition amongst them (predominantly on the pricing front) as well as investor ignorance render no competitive advantage to them.

B. Long-run returns

The regression model was run for 78⁶⁵ observations, with Cumulative Average Returns for 12-, 24- and 36-month periods (CARs) being the dependent variables. Tables 20(a), 20(b) and 20(c) report coefficient estimates.

Insert tables 20(a) - Regression results for CAR12

Insert tables 20(b) - Regression results for CAR24

Insert tables 20(c) - Regression results for CAR36

The model is run for three sets of CARs, namely, 12-, 24-, and 36-month CARs. The longer the time period examined, the better the predictive ability of the model becomes. The 36-month CARs regression run demonstrates satisfactory predictive accuracy (considering the fact that predicting the future is not feasible) with adjusted R^2 (\hat{R}^2) of 16.33%. This compares satisfactorily with other research such as

⁶⁵ 78 IPOs are employed for long-run performance (instead of 79 which is the original sample) as one is delisted/acquired within 12 months of its listing)

Roosenboom, Goot and Martens (2000) with $\hat{R}^2 = 24\%$, Kooli and Suret (2002) with $\hat{R}^2 = 5\%$, Ritter (1991) with $\hat{R}^2 = 7\%$, How (1999) with $\hat{R}^2 = 5\%$, Khurshed, Mudambi and Goergen (1999) with $\hat{R}^2 = 8\%$, and Paudyal, Saadouni and Briston (1998) with $\hat{R}^2 = 19\%$.

Moreover, the F-statistic is significant at the 5% level (and at the 10% level for 24-month CARs, whilst for 12-month CARs is not significant). The hypothesis that the residuals of the sample are normally distributed cannot be rejected as evidenced by the Jarque-Bera test. All standard error coefficients are adjusted for White heteroscedasticity.

Centred Variance Inflation Factors (VIFs) (see table 21 (a), (b), and (c)) are calculated to demonstrate the level of collinearity that exists amongst regressors. As table 21 (a) and (c) show, the centred VIFs are much lower than 10 which is cited by Kutner et al (2005) and Belsley (1991) as a cut-off point. Table 21(b) contains a value which is close to 10 (ROE).

Insert tables 21(a) - Variance inflation factors for CAR12

Insert tables 21(b) - Variance inflation factors for CAR24

Insert tables 21(c) - Variance inflation factors for CAR36

Table 20 (a), (b) and (c) show the results of the multiple regression for the three time periods namely, 12-, 24-, and 36-month CARs. The offering price (OFPR) is found to be statistically significant in all three regressions. Moreover, the standard deviation of the raw returns of the first 21 days of trading (STDRTNS), and the direct costs of the issue as a percentage of the gross proceeds (ICOSTS) are found to be statistically significant in the 24-, and 36-month CARs regression models. Eight out of fifteen variables in the 12-month model are found to have the predicted sign, 13 out of 15 in the 24-month model and 11 out of 15 in the 36-month model.

Specifically, the *advisor/issuer-certifier* variables i.e., UND and AUD are found to have the correct sign except in the 36-month model where, the coefficient of UND

has a negative sign. Prestigious issue-certifiers/advisors are associated with IPOs that perform better in the long run. Both variables are found to be not statistically significant in any model.

Market and institutional-specific variables (LNTAL and STDRTNS) are found to have the correct signs except LNTAL in the 12-month CARs model. Despite the fact that LNTAL is found to have high statistical significance in the case of Initial Returns, in the case of long-run performance it is not statistically important. On the other hand, STDRTNS continues to be statistically significant for long-run returns (except for 12-month CARs). Long-run returns of IPOs are expected to relate negatively with the time taken from application to listing. The longer the time period, the more information revelation takes place, and the less is the risk and consequently, the return. STDRTNS relates negatively to long-run returns demonstrating the fact that high (or ‘hot’) risk-return IPOs turn ‘cold’.

In 12-month CARs, *Issuer-specific* variables have opposite signs from those predicted except ROE. With 36-month CARs, the signs have reversed except for LNAGE and OWNER which, however, are not statistically significant. This means that the greater the owner percentage in the firm, the lower is the long-run return. An explanation for this could be the fact that high owner percentage means less liquid shares, which means that there is not an active market in the particular stock, making it illiquid and irrelevant to investors. How (1999) found a similar result for one-year returns, although not statistically significant. Also, Lee, Taylor and Walter (1996) find that the coefficient of ownership is negatively related to returns for one-, two-, and three-year returns.

LNAGE has a negative sign in all three models contrary to the hypothesis made, albeit, statistically insignificant.

LEVER is negative in the 12-, and, 24-month models and positive in the 36-month model as hypothesised albeit statistically insignificant, with leveraged firms being riskier and thus offering higher returns to investors.

ROE is positive across all models as hypothesised and significant at the 5% level in the 36-month CARs regression. Thus, firms with higher returns on shareholders' equity offer better long-run returns. Therefore, one could argue that ROE is an *ex ante* measure of *ex post* long run performance of CSE IPOs.

LNPBT has a negative coefficient in the 12-month model and positive sign as expected in the 24-, and 36-month models as hypothesised. Profitable firms offer better returns in the long-run. In all three time horizons examined, this variable is statistically not significant.

The sales growth variable (SGROWTH) has a positive coefficient in the 12-month model and negative in the 24-, and 36-month models as hypothesised. In the 36-month model it becomes statistically significant at the 1% level. High growth companies in the CSE that undertook a listing over the period 1997-2002 appear to exhibit poor returns three years after their listing.

The inclusion of projections in the prospectus (PROJ) by IPO firms is not statistically significant insofar as longer term returns are concerned. Moreover, the variable has a positive coefficient as hypothesised in 12-, and 24-month models but a negative coefficient in the 36-month model.

The issue costs (ICOSTS) are found to be statistically significant in the 24- and 36-month models (10% and 1% level respectively), and the coefficient of the variable has a negative sign as hypothesised meaning that issues with lower direct costs as a percentage of the total gross proceeds perform better in the long-run signalling their quality to investors (e.g., Habib and Ljungqvist (2001), Prabhala and Puri (1998) and Bloch (1989)).

Gross proceeds (LNGRP) has the predicted sign in all three models but is found not to be statistically significant.

The dichotomous variable UNDPRT coefficient has a positive sign, as hypothesised i.e., the participation of the underwriter in the IPO firm's capital before listing

improves long-run returns. However, this variable is not statistically significant in any case.

The offering price (OFPR) variable coefficient is found to be negative in all three models, which agrees with what has been hypothesised i.e., penny stocks/riskier stocks will perform better in the long run. The variable is also found to be statistically significant in all three models (5% at the 12-month model and 1% at the 24-, and 36-month models respectively).

Long-run returns of CSE IPOs seem to be more influenced by issuer-specific variables and not so much by market and institutional specific variables. The 'hot' issue market of 1999-2001 was greatly affected by market and institutional specific factors as well as investor psychology. However, the longer-term seems to be affected by issuer specific variables which, however, their influence was not such as to prevent IPO investors from suffering significant underperformance 3 years after the IPO.

VII. Conclusion

Initial Public Offerings in the Cyprus Stock Exchange were quite popular at the change of the millennium. The novice at the time, Cyprus Stock Exchange, offered investors unprecedented initial returns, but also poor long-run performance for those who bought IPO shares at the end of the first day of trading.

Analysing a sample of 79 IPOs that took place in the CSE over the period 1997-2002, the following are found:

- a. The existence of ultra-high returns.
- b. The existence of a hot issue period.
- c. Long-run under-performance of IPOs over a three-year period.
- d. Significant institutional deficiencies.

Specifically, it is found that IPOs in the CSE offered investors initial (first day) returns that are amongst the higher in the World even after adjusting for the hot issue period of 1999. IPOs 'younger' in age, offered higher returns than 'older' ones. Also, smaller IPOs as measured by the size of gross proceeds perform better than larger IPOs. Moreover, IPOs in the Fish Culture and Technology sectors offered investors the highest initial returns.

It is also found that Cypriot firms exploit a 'window of opportunity' that was opened in the market for listing (56% of the companies in the sample filed an application for listing over a 3-month period). However, the high inefficiencies that existed and continuous changes that took place in the regulating and institutional framework of the market as reflected predominantly by the large time span between application and listing (probably the longest in the World), had as a result huge delays in listing. Consequently, IPOs were caught up by the declining returns in the secondary market and the majority of them after the third quarter of 2000 opened below their offer price.

The variables gross proceeds, time from application to listing, capital structure of the IPO firm (leverage), standard deviation of returns 21 days after the listing, and return on shareholders' equity are found to provide a highly explanatory model of raw initial returns.

Also, Cypriot IPOs are observed to underperform in the long-run as the majority of IPOs in academic studies do. Cumulative Average Returns (CARs) are calculated for three time periods, namely, 12-, 24, and 36-months. CARs are found to be negative for all years in the sample period in the 24-, and 36-month periods. In the 12-month period, average CARs over the sample period are all positive. Mean Buy and Hold Returns (BHARs) are found to be negative in all time periods. They are also increasing (negatively) from 12- to 36-months. Looking at CARs, IPOs in the 'hot' issue period have worse performance than the rest of the pack which confirms that findings of many researchers that IPOs in 'hot' periods have a worse performance than the rest in the long-run.

The variables standard deviation of returns 21 days after the listing of the IPO, capital structure of the IPO firm (leverage), return on equity of the IPO firm prior to listing and sales growth prior to listing are found to offer a satisfactory explanatory model of 36-month cumulative average returns.

The institutional and market aspects of the Cypriot capital markets affected the CSE IPO returns in a manner that produced astonishingly high returns. Future research on IPOs in the CSE could focus on those IPOs that took place after 2002 and compare them with those before so that inferences can be drawn on the impact of the introduction of better institutional and market frameworks to regulate the market.

Chapter 2 - Earnings management and IPOs in the Cyprus Stock Exchange 1997-2002

Abstract

Earnings management is pervasive in most publicly listed firms as this is documented in the extant academic literature. The literature reviewed also shows that it is difficult to detect and accurately measure earnings management since managers engaged in the practice employ technically sophisticated approaches so that investors can hardly identify possibilities of earnings management in the financial statements that are presented in the IPO prospectus. In this chapter a sample of 46 IPOs in the Cyprus Stock Exchange is studied, that took place over the period 1997 to 2002 in order to establish whether they employed income increasing accruals before the IPO which later reversed direction. It is found that CSE IPOs employed income increasing accruals prior to the IPO. This comes as no surprise as the institutional and regulatory framework could allow this to happen. Moreover, the components of accruals and especially Creditors have a positive and statistically significant relationship with first-day returns. The components of accruals and especially creditors and depreciation and to a lesser degree inventory are found to have a statistically significant relationship with long-term price performance.

I. Introduction

In this chapter of the thesis, the existence of Earnings Management (EM) is investigated in a sample of IPOs in the Cyprus Stock Exchange over the period 1997-2002 and its connection with underpricing and long-run share price performance. EM cannot be directly measured. A number of methods have been used in the academic literature to obtain proxies for EM. The problem that exists with these methods *vis-a-vis* the Cyprus Stock Exchange is that the latter is a relatively novice exchange (inaugurated in March 1996) and there is just not sufficient number of firms listed over the aforementioned period to accommodate the application of models such as the Jones (1991) or the modified Jones (1995) to separating managed and unmanaged discretionary accruals.

Towards this end, various yardsticks are employed that can reveal the existence of EM and at the same time, they can be measured.

Firms have strong incentives to engage in earnings management during the IPO process. Going public allows firms to tap external funds for future development, to provide an exit for founders and venture capitalists, to attract publicity, or to take advantage of investors' temporary mispricing. No matter why a firm chooses to go public, its private owners always benefit from a high price of IPO shares. Therefore, an IPO firm is very likely to engage in earnings management so as to report good performance and obtain a higher valuation and consequently, more IPO proceeds.

Firms also have the opportunity to manage earnings around IPO. Accounting principles allow firms' management to have some level of discretion in summarizing and reporting business activities. For example, managers have the flexibility in choosing the estimates for expected lives and salvage values of fixed assets, obligations for pension benefits, the amount of deferred taxes, and losses from bad debts. They also have the freedom to choose one from a few acceptable accounting methods for reporting the same transaction, such as LIFO or FIFO for the inventory valuation method, the straight-line or accelerated schedule for the depreciation method. In addition, managers can exercise certain discretion in working capital

management that involves, for instance, inventory level, timing of goods shipments or purchases, and receivable policies. Moreover, managers can choose to make or defer expenditures, such as R&D, advertising, and maintenance. Since IPO firms tend to be relatively small and with little publicly available information before listing, investors have to rely heavily on issuers' disclosures. Due to the high level of information asymmetry, the IPO process is more susceptible to earnings management because it is easier for managers to manipulate earnings using the abovementioned discretions.

Quite a number of studies have investigated earnings management of IPO firms, especially in the U.S.A.. Consistent with the above arguments, these studies document that there are abnormally high discretionary accruals in the year before and the year of IPO. There is also evidence that abnormal accruals in the IPO year are associated with the post-IPO long-run stock underperformance. However, no similar study has been done in Cyprus yet. The aim is to fill this void by studying the earnings pattern around IPOs for a sample of Cypriot IPO firms during the period of 1997-2002 to shed light on whether entrepreneurs of these IPO firms actually manage their earnings.

The aim is to examine earnings and other relevant variables of these firms over a period of six(6) years, i.e., from three years before the IPO to two years after (plus the IPO year). The following issues are studied: First, the aim is to determine if there is big increase of earnings proxied by return on total assets (ROA), return on total assets net of cash (ROANoC), and return on sales (ROS) in the year before the IPO (year t_{-1}). The second aim is to find out if any earnings management pattern is related to accounting accruals. Moreover, the relationship of earnings management with short- and long-run price performance of the IPO is investigated.

As it has already been established in a previous chapter of this thesis, the IPO process in the CSE over the period of the sample was characterised by certain institutional features and deficiencies. For example, the company directors of a firm in Cyprus would be primarily liable if the information published in the prospectus is inaccurate (under the Companies Act), whereas in U.S. it is the underwriters who would be mainly liable. This should reduce the incentives for earnings manipulation

in IPO in Cyprus. At the same time though, there was neither due diligence requirements from the authorities nor the investors. Given that investors rely heavily on financial reports for information on IPO firms, this may encourage entrepreneurs to engage more in earnings management. Third, unlike the rule-based accounting in the US (GAAP), Cyprus's accounting system is principle-based (IAS). On the one hand, principle-based accounting may give management more room to manage earnings. On the other hand, it also empowers auditors to question the integrity of the accounting numbers no matter how insignificant that number is.

Due to the relatively young age of the Cyprus Stock Exchange and the Capital Markets in Cyprus in general at the time, the various players were inexperienced vis-a-vis the IPO process and outcomes of their actions (or rather their lack of action). This 'cocktail' of inexperience, inadequate institutional framework, and limited equity culture provided many incentives to those that had the motives to manage earnings.

CSE IPO firms are found to employ income increasing accruals prior to the IPO and that these accruals reverse at year t_2 . This is also reflected in profitability measures (ROS, ROA, ROANoC) that peak in the year before the IPO (t_{-1}) and decline thereafter. It is also observed that both discretionary accruals and total accruals have a positive relationship with first day returns meaning that possibly investors' rate of adjustment of IPO valuations for the presence of income increasing accruals is less than that of underwriters'. Moreover, the components of accruals and especially Creditors are found to have a positive and statistically significant relationship with first-day returns. Also, the components of accruals and especially creditors and Depreciation and to a lesser degree Inventory have a statistically significant relationship with long-term price performance with the expected signs.

In summary, the findings of this chapter suggest that earnings management did actually took place in CSE IPO firms over the period of the sample, through income increasing accruals. CSE IPO earnings management seems to be part of wider institutional and procedural inefficiencies that existed in the IPO process at the time. This is the first complete study of earnings management of CSE IPOs over a turbulent period that was marked by the collapse of investors' confidence, great

losses, political upheaval and ultimately the decline of the CSE index. Therefore, a major contribution of this thesis is that it sheds light on the practices of issuers at the sample period.

In part II of this chapter of the thesis, the extant literature on earnings management is reviewed followed by part III which describes the prevailing regulatory and institutional framework of going public in the Cyprus Stock Exchange. This is followed by part IV which presents the research design, and part V which is the data analysis including the empirical results. The chapter ends with part VI which is the conclusion.

II. Literature review

A. Introduction

This chapter will provide an in-depth review of the academic literature on the subject of earnings management. The review will first define earnings management drawing from various definitions found in the extant literature and discuss incidences where earnings management is practiced by managers as well as the motives behind earnings management.

By reviewing the literature on the subject it is evident that, earnings management is pervasive in most publicly listed firms as mentioned by Lo (2008). It is one of the ways that managers employ to enhance their own reputation as well as their firms' reputation. Through earnings management, managers are able to reflect future firm potential for growth, stability, and viability and this attracts investors and persuades stakeholders to invest more in the firm. Earnings management as discussed by Xiong (2006) covers the negative aspect of a firm's economic performance and this is one of the managerial motives particularly when issuing equity or debt capital. Earnings management is thus common in firms that are about to issue fresh capital using an IPO. The main focus of this chapter is earnings management and how this is related to IPOs, accruals management and moreover, how it influences the pricing of IPOs. Academic researchers including Nagata and Hachiya (2007), Jackson (2004), and Seger (2008) have argued that earnings management influences the pricing of a firm's IPO in the capital markets.

B. Discussion on Earnings management

Earnings management is one of the areas that have received considerable attention in academic literature in so far as the management of a firm's performance and the management performance evaluation is concerned. As defined by Beneish (2001), earnings management is the process by which managers of a firm take deliberate steps (while sticking to GAAP) to achieve a desired reported earnings level. Managing earnings is an intervention in the process of external financial reporting and is purposeful; it is focused on achieving a specific private gain and is thus not a

neutral operation process. The process occurs when managers use judgment in structuring transactions and reporting financial data so as to alter the financial accounts. This is achieved by either misleading stakeholders regarding the firm's economic performance or influencing the contractual outcomes, which depend on the reported accounting numbers. In support of Beneish's definition, Healy and Wahlen (1999) define earnings management as the process by which managers utilize judgment in financial reporting with a specific intention that they desire to achieve through the process.

According to Beneish (2001), there are various ways in which managers modify the reported earnings in firms to meet their desired benefits; this is the main determinant of the accounting choice selected by firms. It is possible that such management occurs in the accruals and not in the earnings component of cash flow. In financial reporting, the main focus is always on components and measures of earnings. Accrual accounting allows for recording of financial effects on an entity's transactions while the other events associated with cash are recorded in their period of occurrence rather than when the cash related to the events, transactions and circumstances is received. Healy and Wahlen (1999) further argued that accrual accounting uses deferral allocation procedures, and accruals whose objective is to link revenues, gains, expenses, and losses with the period of transactions so as to reflect an entity's performance in that period rather than merely listing cash outlays and receipts. Matching of revenue and costs, amortization and allocation, decrements and increments in liabilities and assets, losses and gains, expenses and revenues is the main essence of accrual accounting in performance measurement for entities (Dechow et al. (2010)).

As mentioned by Dechow et al (2000) investors can assess the economic performance of an entity by using the basic accounting principles like revenue matching and recognition. Beneish (2001) further mentions that earnings management is a real and unobservable component of accruals and in most cases investors cannot unravel the effect that earnings management has on the reported earnings. One of the key challenges in earnings management is that investors are not able to observe it and measure it directly as a component of accruals.

Earnings management actions range from the legitimate managerial activities to illegitimate management actions that result in fraud. Virtually, all managerial actions affect earnings and thus constitute earnings management. Some of these activities are legitimate discretionary choices that influence economic transactions and cannot amount into fraud since the financial statements reflect true and fair view of the firm. However, in cases where managers involve themselves in activities such as tax evasion, this amounts into fraud. As long as accounting judgment and choices conform to the established standard frameworks such as IFRS and GAAP, the activities are deemed legitimate and not amounting into fraud (Lo (2008)). Therefore, earnings management has much to do with the quality of earnings.

i. Perspectives on earnings management

Two perspectives of earnings management are (a) the opportunistic perspective and (b) the information perspective. The opportunistic perspective argues that managers' intention is to mislead investors while the information perspective holds that managerial discretion is to reveal to investors the private expectations concerning the firm's future cash flows (Beneish (2001)). The definition given by Beneish shows that earnings management is primarily done to hinder deteriorating performance and thus enhances a signal in the reported earnings.

Rangan (1998) added that managers that have frequent external financial reporting requirement, report earnings conservatively so as to enhance reputational signalling effects and benefit in subsequent equity offerings. Frequent issuers in this case refer to firms that have more than one offering in seasoned common stock within a two-year period. However, there is also a wealth of academic research that demonstrates that earnings management is primarily exercised to reveal relevant information on a firm's performance. It is often unclear in the extant literature whether earnings management is directed towards concealing deteriorating financial performance and thus misleading investors or its main purpose is to allow managers discretion in informing the public and investors alike about a firm's earnings (Beneish (2001)). For a number of definitions on earnings management please see appendix C.

ii. Earnings management in Continental Europe and in Anglo-Saxon countries

Earnings management was in the past deemed a characteristic of Anglo-Saxon countries since there was so much empirical and practical evidence from these countries. These countries were also the first to adopt accounting standards as a way to address financial problems that were faced by accounting information users. The main differences in the institutional backgrounds are traced to the traditional perception on the role of financial markets and the legal systems in capital provision. Anglo-Saxon countries have common law system and they value the capital provision role of financial markets. According to Blom (2009), common law countries resolve information asymmetry through public disclosures and are characterized by equity and debt markets that have diverse investors, strong investor protection, and high litigation risk. Accounting information in these countries is focused on meeting investors' needs; this reduces managers' determination to manage earnings due to the fear of high litigation risks if such activities are identified. Continental Europe is mainly comprised of code-law countries where capital markets place less demand for public disclosures and are less active as intermediaries. Investors in these countries are represented closely in firms' corporate governance allowing communication to play a critical role in solving information asymmetry.

In these code-law countries, accounting information is focused on minimizing the costs related to politics, dividends, and taxes (Blom (2009)). As a result, the accounting standards applied in these code-law countries increase managers' discretion to decide when economic losses and gains are included in the accounting income. In the context of Continental Europe, most firms are family-controlled with heavy reliance on debt financing and stock exchange markets that are controlled by companies that have a few shareholders. Creditor-oriented accounting in Continental Europe places emphasis on capital preservation and thus the balance sheet is more important than the income statement. Wide and dispersed companies' ownership in the Anglo-Saxon countries have pushed for disclosure requirements that are focused on reducing information asymmetry. Development of regulatory bodies and the role of regulators have played a critical role in influencing these environments.

Code-law countries like Germany and Switzerland are characterized by lower investor protection rights as compared to common law countries (e.g., UK and USA). In an effort to protect private control benefits, firms use earnings management as a way of concealing their performance from outsiders. Code-law countries' accounting offers greater opportunities and incentives to smooth and minimize income fluctuations than common law countries. Blom (2009) added that different audit environments have different levels of influence on earnings management. National differences in the audit environments strongly affect earnings management. Benefits involved in earnings management outweigh costs of such activities in countries that have weak investor protection; this makes earnings management vary from one jurisdiction to another. Reliance on the international capital markets also affects earnings management. Firms that are cross-listed in different countries' stock exchanges, practice less earnings management. Companies with foreign exchange listings face a multitude of restrictions and are thus exposed to higher litigation risk. Such restrictions give these firms a greater incentive to remain more transparent. Quality of earnings is thus enhanced when a firm is cross-listed in a renowned international stock exchange.

Although stock exchanges and other institutions have been developed in Continental Europe, these institutions are yet to assume practical importance since the governments are yet to allocate to them adequate resources as compared to countries like the United States (Tendeloo and Vanstraelen (2005)). In addition, there have been less stringent accounting rules, which makes it difficult to know when accounting estimates are abusive. These traditional ownership structures have affected the stock market features. Non-owner managers choose income-increasing reporting alternatives while owner managers hardly do that since they have less fear of claims from shareholders or hostile takeover. Managers with no ownership are likely to opt for earnings management to mask poor performance so as to satisfy the shareholders. Financial markets have been globalized and this has increased foreign investment in Continental Europe creating a new trend of development of disclosure and reporting practices. Countries like Germany and Switzerland have now adopted GAAP and IFRS as their accounting standards. While the German stock exchange market has allowed for optional adoption of either GAAP or IFRS, it has made it mandatory for publicly listed companies to apply either US GAAP or IFRS.

According to Blom (2009), studies have shown that value relevance is high for earnings that are prepared under IFRS and US GAAP than those prepared under German GAAP. He further argues that German firms are identified to engage in significantly higher income smoothing than US firms.

iii. Incidence of management of earnings

Earnings management is a widespread aspect in publicly listed companies and it is critically essential for enabling firms to face pressure in meeting analysts' expectations (Iatridis and Kadorinis (2009)). Where they expect their competitor firms to be also managing earnings, relative review of a firm's performance leads managers to earnings management. Earnings management occurs more often than what is revealed by court actions. It is not, however, clear whether the process is pervasive or not and this makes it implausible for firms to face similar motivations in managing earnings. It is more likely that earnings management will be found in firms where performance is either good or bad. Iatridis and Kadorinis (2009) concluded a study on UK firms that engage in earnings management and its related activities. The study focused on voluntary accounting disclosures and its provisions, debt covenants violation, compensation management, debt and equity capital needs as they relate to earnings management. Their study examined how earnings management is linked to meeting or exceeding financial analysts' forecasts.

According to the study, findings showed that firms that have high leverage ratios and low profitability tend to employ earnings management. The study also shows that firms with debt and equity capital needs that are close to violating debt covenants are more inclined to manage their earnings. In addition, the study argued that earnings management is employed to improve financial performance and thereby reinforce compensation. In this manner, the firm meets or exceeds earnings forecasts of financial analysts. From the study, one can infer that those firms with voluntary accounting disclosures are less inclined to earnings management practices. Iatridis and Kadorinis (2009) argue that firms use earnings management in an effort to optimize stock price performance. Earnings management allows managers to issue equity and debt capital successfully. They further argue that managers resolve to earnings management to avoid breaching debt covenants whose impact would be

negative on the company's credibility and market reputation. Exceeding, or at least meeting financial forecasts by analysts, is one of the necessities in a manager's effort to retain prosperity and credibility.

According to the same researchers, managers offer voluntary accounting disclosures to inform stakeholders about the ability of their firms to meet business and financial targets. Informativeness and size of accounting information disclosed differs from one company to another. Firms are likely to disclose good information as opposed to bad information. This information influences a firm's share price thus maximizing managerial compensation. Voluntary accounting is also chosen to reduce potential contractual, political, and litigation costs. Voluntary accounting disclosures allow managers to demonstrate superior financial performance. They further minimize information asymmetry and thereby improving communication between investors, lenders and managers.

Financial analysts also value highly firms that offer voluntary accounting disclosures. In an effort to inform and sooth stakeholders concerns on their firms' viability and future plans, managers often voluntarily disclose information that could be quantitative or qualitative (Brau and Johnson (2009)). Their main objective in this case is to provide explanations and clarifications to the concerned and interested parties regarding financial performance and eliminate their doubts on possible impediments on their firms' future financial progress and growth.

iv. Earnings management Incentives

Incentives for managing earnings can be categorised into two main groups, namely those derived from Positive Theory and those derived from Capital Market Incentives.

Positive theory incentives

Watts and Zimmerman (1990) proposed three hypotheses that are based on Positive Theory. This theory focuses on the internal contractual reasons that make firms manage earnings. One of these hypotheses is the Bonus Plan hypothesis that discusses the role of different accounting choices in managers' compensation plans.

To align managers' goals with those of shareholders, managers are provided with compensation that is based on performance and is additional to regular salaries. Managers thus have incentives to choose accounting methods and accounting estimates that improve their compensation. The Debt Covenant hypothesis shows that managers' earnings management incentives depend on debt covenants. Creditors impose restrictions on share repurchases, issuance of more debt and dividend payments. These restrictions are expressed through accounting ratios that managers employ with the intention to manage earnings in order to meet these requirements. The last hypothesis is the Political Cost hypothesis that examines the role of accounting in political processes. Political processes add costs to firms that make excessive profits (e.g. monopolies). Such firms may face pressure to reduce their prices and as such their managers have incentives to manage earnings downwards so that they can be seen to be less profitable and avoid political attention.

Capital market incentives

Investors and analysts use accounting information to value share prices. This gives managers an incentive to influence their firms' short-term share price by manipulating accounting information. Some of the incentives to report high earnings come from customers' willingness to pay high prices, and suppliers and lenders willingness to give better terms. Meeting an earnings benchmark is the most common capital market incentive. This benchmark for example can be previous period performance. Managers have incentives to meet the simple earnings benchmark in order to avoid losses, meet analysts' expectations and report increases in their quarterly earnings.

v. Managers' motives in earnings management

Debt covenants violation

Iatridis and Kadorinis (2009) argued that debt covenants violation implies that the volatility of major accounting measures such as liquidity and earnings raises bankruptcy risks. Debt covenants in a firm indicate that corporate performance is poor and this has negative implication on a company's stock behaviour, its credibility as well as the managers' reputation. To avoid undesirable effects as well as abide by debt covenants, managers are challenged to 'massage' accounting numbers to lessen

the possibility of violation in these covenants. To do this, managers make use of income-increasing accounting accruals that are mostly discretionary (those accruals that a company has a discretion to decide whether they will be termed as accruals or not). Managers thus influence the reported earnings to improve compensation benefits as well as their reputation (Dechow et al. (2010)). Where managers' compensation is based on earnings targets, they tend to adopt accounting methods that are income-increasing so as to optimize their total emoluments.

Where earnings are below a certain lower bound or are above a certain upper bound as designated by a bonus plan, firm managers select accounting methods that are income-increasing (Iatridis and Kadorinis (2009)). Sometimes managers may use discretionary accruals to strengthen a firm's value and not necessarily to enhance managerial compensation. Accounting-based contracts are likely to make managers act opportunistically by adopting income-increasing policies so as to reinforce their compensation (Dechow et al. (2010)). The same authors argue that in order to address managerial opportunism, it is advisable to include a large number of outsiders in the firm's board of directors, employ a strong commitment for audit, closely inspect the CEO, ensure strict compliance with the auditing and account regulations ensuring independence of the procedures of audit, and reinforcing investor protection mechanism.

vi. Debt and equity issues

Managers often engage in earnings management when they are about to issue debt or equity capital. The main intention here is to report earnings during the period of the issue such that they can achieve lower capital costs. Earnings management is often done when the firm is about to embark on an initial public offering (IPO). This has been referred to by Seger (2008)) as 'cooking' of books. Where the offering is particularly large, there are high possibilities that managers will embark on earnings management prior to the IPO (Iatridis and Kadorinis (2009)). Earnings management at such a time is inclined to enable the firm to easily obtain financing and do so with better terms. Earnings management allows managers to inject optimism into the financial estimates and thus achieve market premiums that are more favourable. One

of the motives for earnings management is therefore to prepare the way for an attractive IPO that is to be issued in a company's near future.

vii. *Exceeding or meeting financial forecast of analysts*

Another key motive of earnings management involves the meeting or exceeding of forecasts made by financial analysts⁶⁶ (Healy and Wahlen (1999)). Failure to attain investors' expectations and analysts' forecasts could prove detrimental in terms of a firm's capital accessibility, management compensation, prospects, and future potential. Firms with good reputation, superior governance mechanisms, volatile earnings, high institutional ownership and high growth prospects demonstrate strong incentives for earnings management and thus influence positively analysts' forecasts (Healy and Wahlen, (1999)). The cost associated with meeting financial analysts' forecasts through earnings management is compensated through high stock returns that are likely to be achieved. According to Nagata and Hachiya (2007), meeting financial analysts' forecasts is important in enhancing a firm's stability and viability as well as ensuring capital market access and facilitating a firm's growth potential. Surpassing analysts' earnings forecasts thus reinforces and preserves a firm's reputation, financial standing, and image together with that of its managers.

viii. *Earnings management under GAAP framework and IFRS framework*

According to Blom (2009), consideration of hidden reserves would show no difference in management of earnings behaviour between IFRS and German GAAP adopters. However, if hidden reserves are excluded from their research, then they find that voluntary IFRS-adopters seem to practice earnings management more than they did under German GAAP. IFRS execution increases volatility, which in turn increases risk leading to increased costs. IFRS implementation thus offers an incentive to manage earnings using accruals. This finding implies that GAAP mitigates against earnings management more effectively than IFRS does. However, the results are further influenced by the industry or firm size, firm financing and

⁶⁶ Firms that have their actual earnings above the forecasted per share earnings are deemed to have exceeded analysts' forecasts.

profitability. IFRS requires that liabilities and assets are valued against their fair value and this increases volatility and subjectivity of earnings. According to Blom (2009), IFRS is too complex and rigid and this leads to financial statements that are difficult to understand.

IPO firms work within the GAAP framework that is issued by FASB (Financial Accounting Standards Board) to help firms to legally manage their accruals and report healthy financial statements. Accounting manipulation is often executed to reflect strong earnings. This has been referred to by Brau and Johnson (2009) as 'window-dressing'. According to Teoh, Welch and Wong (1998b), the accrual accounting system under GAAP provides managerial discretion that recognizes the timing and the amount of expenses and revenues. This argument is supported by Levitt (1998) where he argued that accruals gives managers some flexibility that enable them to manage earnings of subsequent periods by creating 'cookie-jar' reserves, thus eroding earnings and financial reporting quality. The findings of this research shows that while IFRS may allow for more earnings management, GAAP may also allow for earnings management implying that earnings management may occur in both frameworks at varying levels.

ix. Lock-up agreements and earnings management in IPOs (Initial Public Offerings)

Lock-up arrangements (also known as 'lock-ups') exist when underwriters and existing shareholders agree that their holdings should not be sold for a specified time after the date they are offered without a prior written consent by the underwriters. Lock-ups generally restrict the volume of shares to be traded for an IPO and thus affect the excess returns that shareholders earn in early trading (Hogan and Olson (2006)). The amount of owners' equity retained by shareholders reduces the volume of shares issued and thus affects the excess returns on trading. The higher the volume retained the lower the excess returns. Lock-up agreements differ; some firms go for absolute date lock-ups, others go for relative date lock-ups, and still others go for staggered or single lock-ups. Potential factors that influence a firm's selection of lock-up contracts include signalling, agency problems, information asymmetry and

certification issues. Certification and information asymmetry provide strong evidence of firms' choice of lock-ups.

x. Engagement of certifying agents in IPOs

Firms that are preparing to issue equity through an IPO often employ underwriters, auditors, and law firms who assist them through the IPO process. Other firms work with venture capitalists that provide them with guidance and also to enable them effectively run the IPO (Brau and Johnson (2009)). This group of specialists is mainly hired as certifying agents (CAs). A study conducted by Brau and Johnson (2009) shows that there is a statistically significant and negative correlation between earnings management in an IPO firm and the presence of the aforementioned CAs. The study examines whether CAs attempt to improve a firm's quality and also to establish whether CAs mitigate earnings management in issuing firms. The study acknowledges empirical support of the signalling hypothesis arguing that IPO firms self-select CAs for their IPOs. Although the study did not identify support for post-engagement earnings management mitigation by CAs, it showed that CAs upon engagement do not have huge impact on earnings management in the IPOs.

Prior to the IPO, managers engage in earnings management and this affects the pricing of IPOs. Insiders of firms who plan to issue shares through an IPO, often window-dress aggressively in order to acquire a high offer price for their personal shares (Roychowdhury (2006)). Accruals management during the IPO process is deemed opportunistic (Beneish (2001)). According to Roychowdhury (2006) lower-quality firms often 'window-dress' their financial results when they want to issue new capital through an IPO. The study also shows that aggressive earnings management is harmful to the firm in the subsequent performance period. This view is supported by Brau and Johnson (2009) where they argue that firms with an aggressive attitude towards earnings management are likely to suffer delisting in the future. They further argue that window dressing has negative impact on an IPO firm's share price long-run performance. Those firms that manage their accruals aggressively before the IPO encounter worse performance in the long-run. Subsequent underperformance of IPO firms is attributed to analysts' forecasts that are upwardly biased based on 'window-dressed' earnings. Firms often manipulate

earnings upwardly prior to share issues; these managerial actions often have their market repercussions and consequences on the firm's performance in the future.

Prestigious underwriters, auditors, venture capitalists, and lawyers have reputation incentives in certifying issuing firms of high quality. The result of these CAs actions is the reduction of an IPO initial underpricing and the increase of its long-run returns (Brau and Johnson (2009)). One way in which a firm influences the perception of investors and stakeholders alike is by hiring prestigious CAs. High quality firms select prestigious CAs so that they can signal investors their quality. The second way through which a firm uses CAs to influence the success of its IPO is through post-engagement mitigation whereby CAs mitigate the extent of window-dressing as may be revealed in the prospectus. According to Brau and Johnson (2009), potential window-dressing and asymmetry in information gives high-quality firms incentives to signal high quality. Engaging high quality and prestigious auditing firms, venture capitalists, and underwriters is often done to reflect the firm's quality either through signalling or mitigation. These CAs may work as watchdogs to mitigate window dressing in the prospectus. This is referred to as post-engagement mitigation theory and its argument is that window dressing has a negative correlation with a CAs prestige since prestigious CAs would not risk their reputational capital by permitting poor and low quality firms exercise window-dressing. CAs ensure that the IPO issuing firm has drawn the line clearly in its financial statements.

xi. Post-engagement mitigation of earnings management

After engagement, a CA works directly with the IPO issuing firm in preparation of the IPO prospectus. Certification occurs after the CA has managed to mitigate aggressive management of earnings. For instance, if a firm hires a prestigious CA and during the drafting of the IPO prospectus the CA realizes that the firm had aggressively managed its earnings so that it can appear financially healthy, the CA, in his desire to maintain intact its reputational capital, may advise the firm to be conservative in managing its earnings thus mitigating the degree of the firm's window-dressing in its IPO prospectus (Brau and Johnson (2009)).

xii. Signalling

Equity issue signalling has been referred to by Brau and Johnson (2009)) as signalling theory where high quality firms use prestigious CAs to reflect their high quality in the investor public. A high quality firm as measured by earnings management has a low level of accruals, particularly discretionary accruals. Such a firm may choose a high profile CA to signal quality prior to the IPO. Investors may look at CAs to discern between low and high quality issuers. Sometimes, signalling theory is couched with the possibility of pre-engagement mitigation where the issuer clings to ex ante expectations on earnings management allowed by CAs. Under pre-engagement mitigation (mitigation of earnings management prior to engagement of a CA), the IPO firm does not act conservatively through its prospectus to signal investors but rather increases the probability of a high-prestige CA working with the firm. Window-dressing under pre-engagement mitigation presents a threat that makes most prestigious certifiers to decline working with the issuing firm since their primary objective is to preserve their reputational capital.

The IPO issuing firm looks forward to managing its earnings. Prestigious underwriters possess valuable reputational capital that could be leveraged by the IPO firm to certify the firm's quality and thus attract more investors. Prestigious underwriters possess incentives that back up issuers but they also risk losing this reputation in case of firms that have managed their earnings. How investment banks perform has a great impact on these firms' market share. Significant damage of a particular IPO firm reputation has substantial damage on the investment bank's reputational capital that far outweighs the penalties imposed by legal and regulatory authorities. The next category of CAs is auditors who are engaged to attest the firms' financial statements. Prestigious auditors also have a high reputational capital to endorse and therefore aim at auditing high quality firms. As mentioned by Hribar and Collins (2002), auditors have a strong reputation that influences a firm's credibility as far as earnings are concerned. High quality auditors thus consistently minimize IPO underpricing or in other words, mitigate asymmetric information.

Prestigious law firms also have significant reputation that carries additional merit. This makes them carry out price adjustments in pre-IPO price before certifying in

order to secure their reputation (Phillips, Pincus and Rego (2003)). Venture capitalists screen, monitor, and certify IPOs to reduce asymmetric information and ensure that the appropriate quality is certified. This certification process assists investors to verify firms' quality by looking at the CA who has been employed in the IPO prospectus. Use of a prestigious and high profile CA may indicate that earnings management is reduced in the IPO issuing firm (Phillips, Pincus and Rego (2003)). The challenge, however, is that there are many other firms that would be raising equity through an IPO and are not engaged in earnings management and due to the costs involved in engaging high profile CAs, they use cheap CAs who are also of high integrity. This therefore leaves the investor with no way of identifying whether the firm has engaged in earnings management or not.

xiii. Detecting and estimating earnings management in IPOs

According to Lo (2008), there is a wide body of academic knowledge about the existence of earnings management in publicly listed companies. However, Lo highlighted that detecting earnings management is remarkably difficult. This view has been supported by (Healy and Walhen (1999)) who suggested that the difficulty in detecting earnings management has primarily been due to the fact that those involved must first estimate the earnings prior to detecting the effects of managing earnings.

As mentioned by Healy and Walhen (1999), the technical difficulty in detecting earnings management is drawn from an ex-post perspective. Fundamentally, those managing earnings hope to do that without the possibility of being detected. Managers with sophisticated earnings management skills are likely to be successful in managing earnings with little or no detection since they engage in elaborate plans of concealment that enable them to evade detection. People involved in financial reporting are well educated, experienced, and intelligent and are guided by professional codes that are explicit and an ethics code that is often implicit. It is obvious that investors, regulators, and lawyers will not detect major differences that may arise in financial reports (Nagata and Hachiya (2007)). This implies that earnings management involves elaborate technical skills for it to gain the desired benefits.

Sometimes managers as mentioned by Lo (2008) make IPO financial statements completely non-comparable with the shadowed financial statements as a way of camouflaging earnings management. Firms with financial statements that are completely non-comparable are likely to be successful in hiding earnings management. However, Seger (2008) argued that it is possible for potentially affected parties and CAs to identify earnings management by watching the operating cash flow against the company's real earnings. Where the earnings exceptionally exceed the operating cash flow, the financial statements are likely to be reflecting earnings management.

According to Lo (2008), boards of directors and managers are protected by the so-called 'business judgment rule' in Law, which makes it hard to find them liable in case of bad business decisions. This is in contrast to accruals management and other accounting manipulations, which are subject to accounting standards as a benchmark and are thus subject to auditors examination as well as examination by potential forensic accountants and courts. As suggested by Teoh, Welch and Wong (1998a), reported earnings comprise of cash flow from operations and accruals. By decomposing accruals into long-term and current components and evaluating these components separately one can examine whether there is possibility of management of earnings (Hribar and Collins (2002)). Current accrual adjustments include short-term liabilities and assets that are used in running the day-to-day business operations. In instances where managers are foreseeing an IPO issue, they can increase the current accruals by advancing revenue recognition with credit sales or by delaying expenses recognition through low bad debts provision or deferring expenses recognition after cash has been advanced to suppliers by the firm. Long-term accruals adjustment include long-term net assets, which can be improved by decelerating depreciation, or reducing deferred tax, which is the difference between recognized tax expense in the financial reports and the actual tax expense paid. Long-term accruals could also be increased by realizing unusual gains (Phillips, Pincus and Rego (2003)).

As mentioned by Teoh, Wong, and Rao, (1998c), managers succeed in managing earnings through the IPO process since they hardly publicize accrual adjustments and this makes it hard for investors to deduce discretionary accruals. Some of the

accruals adjustments are expected and are actually necessary to investors. A good example is the case of fixed-asset intensive firms which mostly record high depreciation. Rapidly growing firms also record higher revenues than cash sales. This makes it important for one to decompose a firm's accruals into their two components, namely discretionary and non-discretionary in order to evaluate and measure earnings management. Such a model can only be applied by specialists in the financial markets and investors may not have the knowledge or the expertise in that area making it inevitable for them to go by what is shown in the IPO prospectus.

A study carried out by Xiong (2006) suggested a different method of measuring earnings management that CAs could use before certifying the IPO in order to detect and amend any possibilities of earnings management. These methods include the total discretionary accruals method, single accruals method, and the total accruals method. However, these methods may not be applicable to many investors due to limitation in expertise and could therefore be of use to CAs who wish to preserve their reputation capital and/or secure investors.

xiv. Potentially affected parties in earnings management

In the case of IPO firms, stakeholders who could potentially be affected by earnings management include inter-alia various financial statement users including bond investors, equity investors, trade unions, bankers, regulators, customers, competitors, and suppliers. The main group that is affected directly is obviously the investors who are willing to purchase a company's equity capital. Investors tend to overpay for a firm's shares in which managers are engaged in earnings management. This explains why the future share price performance of such firms often performs poorly in the long-run (Bagnoli and Watts (2000)). This view finds resentment particularly amongst investors who believe in capital markets' efficiency. It is therefore advisable for investors to anticipate earnings management. This would enable them to discount the information provided vis-a-vis the IPO price. It is important for investors to know that IPO markets do not operate in a similar manner as secondary markets do. There is a significant difference in their degree of efficiency (Bagnoli and Watts (2000)).

A few of these potential imperfections as named by Lo (2008) include short-sale constraints. In the secondary market, efficiency is attained through balancing of sellers and buyers as well as the price that adjusts the balance. Existing short-sellers and shareholders often counter-balance the limited number of share buyers or what is referred to as short-sale constraints. In the IPO market, sellers comprise of company insiders and the IPO price is determined by investment banks for the underwritten issues. Any uncertainty about share value and informational transformation is constrained by limited selling activity since the IPO subscribers are often susceptible to the Winner's Curse (Bagnoli and Watts (2000)). Demand and supply of IPO shares is not necessarily balanced implying that managing earnings in order to improve the perceived share value could potentially succeed.

xv. *Different models developed on earnings management measurement*

Most commonly used models in earnings management are the modified Jones and the standard Jones model. The Jones model argues that two variables, that is the level of gross plant, property and equipment (GPPE), and revenue changes (ΔREV) account for the unmanaged accruals that occur in firms' economic transactions. Gross PPE determines the depreciation expense while revenue changes affect working capital accruals. The Jones model regresses total accruals with GPPE and revenue changes to arrive at coefficients that can be employed to estimate unmanaged accruals (Xiong (2006)). The modified Jones model focuses on controlling a firm's both credit policies and economic transactions. Total accruals are thus regressed on GPPE and revenue changes, which are adjusted for changes regarding a firm's receivables.

According to (Blom (2009)), DeAngelo's model takes into account the total accruals in a given time as the difference between net income and operating cash flows reported during that period. This is given as $AC_j = NI_j - CF_j$ with AC representing the company's total accruals, NI as net income, CF as the operating cash flow during the specified period (Deumes (2007)). The model compares the total accruals during the period with total accruals in the benchmark period and assumes that the deviations in the two periods reflect earnings management. The Friedlan model adjusted DeAngelo's model; to incorporate growth that influences specific aspects of business

including accruals (Friedlan (1994)). The model assumes that changes in total accruals in two selected time periods comprise of changes arising from growth and changes arising from management's incremental discretion (Deumes (2007)). Friedlan's model deals with non-stationarity, deflating variables by sales.

C. Critical view

A large number of academic researchers have given insightful views concerning earnings management. The various definitions of earnings management provided by different researchers including Beneish (2001) and Healy and Wahlem (1999) have demonstrated agreement amongst them on what earnings management is in business and financial terms. One of the issues that are identifiable from the literature reviewed is the common view that earnings management takes place in IPO firms (Fan (2007)). As mentioned by Nagata and Hachiya (2007), earnings management determines the pricing of an IPO and managers engage in it in order to influence the views of investors by making the IPO attractive. This view is supported by Seger (2008) who argue that IPOs often provide pervasive evidence for management of earnings. Other researchers like Teoh, Wong, and Welch (1998b) argue that IPO firms often report excess earnings in their cash flow statement by including unusual high accruals that are deceptive to investors.

According to Iatridis and Kadorinis (2009), some of the motivating factors in managing earnings include inter-alia the successful completion of debt and equity issues, debt covenants violation and exceeding or meeting forecasts made by financial analysts amongst other factors. Dechow et al. (2010) support this view arguing that managers looking forward to issue an IPO desire to present an attractive business investment opportunity to investors and to improve their company's image as well as their own image. These managers endeavour to present a good picture insofar as earnings are concerned vis-à-vis their company. Brau and Johnson (2009) demonstrate how IPO firms go about issuing new equity and how they involve CAs in the process. In their study, they argue that CAs hardly engage in certification of the IPO prospectus where they are positive that managers have been involved in earnings management. This is because their core objective in carrying out the certification task is to preserve mainly their own reputation capital.

The literature reviewed also shows that it is difficult to detect and accurately measure earnings management since managers engaged in the practice employ technically sophisticated approaches so that investors can hardly identify possibilities of earnings management in the financial statements that are presented in the IPO prospectus. According to Xiong (2006), earnings management is almost impossible to measure for most investors and even CAs, and it requires specialized skills. She further suggests various models that could be used in measuring earnings management including the single accruals method, the total accruals method, and the total discretionary accruals method. In addition to the aforementioned methods, Teoh, Welch and Wong, (1998) have suggested a model of decomposing accruals into short-term and long-term accruals, which would enable investors to identify any unusually high level of accruals and thus the possibility that managers have aggressively been involved in managing earnings. In support of the view, Healy and Wahlen (1999) have suggested that those involved in investigation of earnings management must evaluate the accruals management and examine any possibilities of managing earnings. To explain how managers succeed in managing earnings, Lo (2008) argues that managers are often secured by the business judgment rule that allows them not to become liable in case of improper business decisions.

Most academics agree that IPO firms mostly engage in earnings management and that the time of an IPO provides researchers with the best opportunity to detect any such possibility. However, the findings of the study by Rangan (1998) have refuted most academics' view where they argue that discretionary accruals do not necessarily arise from earnings management but rather from changes in the firm's working capital, which is predominant in IPO firms. Findings of Fan (2007) further support this view arguing that discretionary accruals may not necessarily imply managerial opportunism since they are endogenous to IPOs. This view supports the thought that the information perspective in earnings management is actually more pronounced as compared to the opportunistic perspective. However, if the views and findings of these two researchers were to be followed, the methods suggested in detecting and measuring earnings management as well as most research findings on IPOs and earnings management would be biased or refuted (Fan (2007)).

However, the majority of the literature reviewed confirms that earnings management in IPOs is common and is therefore an important field of research since the knowledge derived significantly assists investors. According to the findings of Seger (2008), earnings management in the time around an IPO issue is driven by managerial self-interest. The results are that managers lower a firm's future earnings while making inferior the post-issue share price performance. Seger (2008) further suggests that investors and CAs should further investigate environmental factors for the pervasiveness of management of earnings.

D. Conclusion

This section of the chapter has explored the literature on various aspects of earnings management including its occurrence, motivating factors, incidences, how the earnings management practice is related to the IPO process, how it can be detected using different models and the casualties of this practice. As mentioned by Seger (2008), the IPO process provides one of the best opportunities for the management of earnings. The study conducted by Dechow et al. (2010) has provided a clear view on the proxies, the determinants as well as the consequences of managing earnings. The study has highlighted those parties affected by the activities of earnings management and has particularly highlighted investors as the potential victims of this practice. To show how CAs play their role in certification, Brau and Johnson (2009) have shown how prestigious CAs including law firms, venture capitalists, auditors and underwriters are employed by IPO firms to signal quality to investors and how they mitigate earnings management to preserve reputation capital of their firms and expertise.

The review further shows that IPO firms should not be mechanically valued on the basis of the reported accounting variables since the variables could be managed by the IPO firms during offer price determination. The findings by Teoh, Wong and Rao (1998) further show that investors are largely unable to understand and therefore detect or measure earnings management and this limits them from identifying the managers activities in 'cooking' the financial statements that accompany IPO prospectuses. The literature reviewed indicates that opportunistic behaviour and earnings management can be costly and should therefore be detected around the

process of an IPO. This can be predicted mainly by using discretionary accruals and the results can assist investors to avoid such IPO firms. Finally, the literature review shows that regulators and setters of accounting standards who have interest in the earnings management behaviour must emphasise investor protection rules in respect of the firms' opportunistic behaviour.

III. Going Public in the Cyprus Stock Exchange

A. Prevailing regulatory and institutional framework

In terms of institutional and regulatory framework, one can observe two distinct time periods in the CSE primary market. The period that is prior to the enactment of the new legislation for financial services firms in August 2001 (i.e., March 1996 to July 2001), and the period after that. The period March 1996 to July 2001 is characterised by certain important regulatory and institutional deficiencies that possibly contributed to the development of the hot IPO market of 1999–2000. These are the following:

- There was no explicit or implicit recourse to underwriters, auditors or any other counsel/advisor of an issue against misrepresentation or misuse of information surrounding IPOs making the threat of costly litigation less critical as a factor that could affect the pricing of Cypriot IPOs. Consequently, no due diligence whatsoever was undertaken for IPO candidate firms by underwriters in the period March 1996 to July 2001 as this was not a requirement by authorities or investors alike.
- No criteria for corporate governance existed. As a result a number of advisors (mostly legal) were part of corporate boards that they were also advising for listing, thus laying the grounds for possible conflicts of interest.
- No regulations for market participants regarding inside information and the users of that kind of information existed.
- Lock-ups were not allowed for shareholders in IPOs.
- Formalised stabilisation activities by underwriters were not allowed in the IPO aftermarket (e.g., Greenshoe option).
- No formal market-making framework existed.
- Short selling was not allowed⁶⁷.
- No rules existed for analysts' professional conduct (e.g., no silent periods).
- No definition of institutional investors (professional investors) existed⁶⁸.

⁶⁷ It is worth mentioning that even today, short selling is not allowed and the concept of the Market Maker is absent from the CSE.

- No rules for ‘Chinese walls’ in financial services companies existed.
- Allocation of shares was at the discretion of the Board of Directors of an issuer from 29th of March 1996 to 27th of October 2000, when it became compulsory to allocate shares to all participants and if oversubscribed, then follow a pro-rata allocation⁶⁹.
- No professional certification existed for people working in investment banks (except for brokers – who also acted as fund managers, investment bankers, investment advisors, analysts etc.).
- By submitting the IPO application, underwriters were committed to a stand-by underwriting agreement. The CSE insisted that the proposed share price of the IPO was fixed at the time of applying for a listing or shortly afterwards and not just before final approval was granted. The price could not be revised, thus it was limited to the price set out in the prospectus. Effectively, the investors could only bid on the quantity of shares they would buy, not on the price of the shares (i.e., no price adjustment existed to regulate excessive demand – fixed price selling mechanism).
- There was a significant time-lag between issue date and the first day of trading which averaged 5 to 6 weeks (ranging from 14 days to 105 days). This time-lag may have influenced the risk profile and costs of IPOs.
- There was also significant time lag between application date and listing date which averaged over the period of the sample 317 days.
- From March 1996 to most of 2001, security titles in the CSE were not dematerialised⁷⁰. This created extreme bureaucracy and significant loss in transaction time for investors and authorities alike⁷¹. It also laid the grounds for legal action against a number of brokers.

⁶⁸ In February 2001, a new law was enacted to forbid the collection of monies from investors that applied through irrevocable applications in order to participate in an IPO. Companies that were not listed by a certain period of time in the CSE were forced to return these funds to the investors. This created market and legal havoc.

⁶⁹ According to the Law 136(I)/2000, article (e), the board could not disqualify any investor from the offering. Until mid-2000, in the case of oversubscription of an IPO, firms would also keep the interest on the monies of the investors, which in certain cases amounted to significant sums.

⁷⁰ In April 2001, the law that enacted the formation of the CSE Central Depository was voted. However, it would take more than 2 years to be completed.

⁷¹ In September 1999, the Cyprus Stock Exchange closed for a month to allow time for brokerage houses, investors and firms alike to sort out the mess that was created with the share transfers that took place the previous months.

- From CSE's inception (1996) to July 2001, prospectuses were approved by the CSE with the consent of the Cyprus Securities and Exchange Commission (CySEC). After July 2001, CySEC was the only approving authority.
- Up and until September 2004, there was only one market for all listed shares in the CSE⁷².

Subrahmanyam and Titman (1999) argue that when stock markets are relatively small, information conveyed through stock prices is less accurate, which generally decreases the advantages of pending for public capital. As the stock market grows, however, the accuracy of information generally improves, yielding greater incentives for going public decisions. Martell and Stulz (2003) argue that countries that liberalise their equity markets have dramatic positive returns in the year following the liberalisation, but these dramatic returns are followed by poor returns, raising the question whether stock prices overreact to equity-market liberalisations. Equity-market liberalisations decrease the cost of capital in two ways. First, Henry (2000) shows that liberalising countries experience unusually high share returns before liberalisation date, which is when investors learn that a liberalisation will take place. Second, Bekaert and Harvey (2000) show that dividend yields (a good proxy for the cost of capital) fall after liberalisation. Martell and Stulz (2003) argue that in the long-run, the ability of firms to benefit from an equity-market liberalisation depends on corporate governance and the protection of investor rights. The success of the liberalisation is determined by the extent to which foreign investors buy shares, either new or existing. As investor protection improves, ownership by controlling shareholders falls, outside shareholders can own more shares, and firms can raise more capital from foreign investors.

Engelen and van Essen (2010) using a large-level dataset of 2,920 IPOs covering a wide range of 21 countries having different institutional and legal frameworks show that the quality of a country's legal framework, as measured by its level of investor protection, the overall quality of its legal system and its level of legal enforcement reduces the level of underpricing significantly. On a similar tone, Hopp and Dreher (2007), using a dataset of more than 500 country-year observations from 29

⁷² The Parallel and Alternative Markets were created in September 2004 together with the new General Index of the CSE.

countries, find that increased protection of shareholders and greater accounting transparency contribute negatively to variations in underpricing. They also find that underpricing is higher when majority shareholders have more leeway to repress minority owners. Moreover, they argue that problems of asymmetric information can be resolved when countries enforce disclosure. La Porta et al. (1997) show that the number of IPOs is positively related with investor rights, the legal origin and the law and order tradition of a country. Chiou et al (2010) examine 4,916 stocks from 37 countries and find that stronger investor protection leads to a decrease in investment risk. Giannetti and Simonov (2006) empirically demonstrate that minority and other investors who generally enjoy only security benefits are reluctant to invest in companies with weak investor protection.

The economic significance for firms operating in a poor legal environment is important as it raises their cost of capital through greater underpricing. La Porta et al. (2002) document that investors are willing to pay more for financial assets when being better protected by the legal system. Shleifer and Wolfenzon (2002) analyze the impact of investor protection on the going public decision. They show that firms would be larger, more valuable, and more plentiful, dividends would be higher (and diversion of profits lower), ownership concentration would be lower, and stock markets would be more developed in countries with better protection of shareholders.

Clearly, the above regulatory and institutional deficiencies of the Cypriot capital markets had a negative effect on the primary market and the quality of services offered since they hindered the proper functioning of the capital markets. After the enactment of the Financial Services Law in 2002, a number of regulatory deficiencies were rectified following a report prepared by Greek consultants commissioned by the state. However, since 88% of the sample IPOs were listed by August 2001 (and no company that was eventually listed on the CSE applied for a listing after the year 2000), it is imperative that such a distinction is made.

Moreover, the framework described above rendered fertile ground for earnings management since IPO firms and their owners had incentives to boost valuations.

B. Procedure for listing in the CSE

The procedure for listing in the CSE over the sample period meant that each company that sought a listing should satisfy *inter-alia* some basic requirements, the most important of which were:

- The issuer should have the right to issue the proposed category of titles in accordance with the company's Memorandum and Articles of Association.
- The expected market value of the proposed issue should be in excess of CY£600,000⁷³ (or approx. Euro 1 million).
- There should be no restrictions in the transferability of the titles listed.
- The issuer should have published audited accounts for at least the three years preceding the application⁷⁴.
- The prospective issuer should be able to demonstrate that it has adequate working capital before the issue⁷⁵.
- The issuer should safeguard that existing shareholders will enjoy pre-emption rights in every subsequent issue.
- The issuer should make a commitment to list all the titles of the same category that had already been issued, or would have been subsequently issued.

According to CSE Regulation 60, issuers can list their shares on the Cyprus Stock Exchange in one of the following ways:

- a. By offer for sale – through the placement of shares that have already been issued
- b. By public offer for sale to the public of titles which have already been issued, or allocated

⁷³From March 1996 up until December 2000, the total equity to be listed should be at least CY£600.000 (approximately €1.0 million). In addition, the main shareholder should not own more than 70% of the equity capital and at least 25% of the equity capital should be dispersed to the wider public (which, however, was not defined explicitly). For companies applying after January 2001 then the total equity to be listed should be at least CY£2,000,000 (approximately €3.5 million) and the main shareholder should not own more than 60% of the equity capital and at least 35% of the equity capital should be dispersed to the wider public.

⁷⁴This requirement of having at least three years of audited accounts halted a number of start-ups from listing. There was another requirement along these lines emanating from the Companies Act Chapter 113, which required 5 years of P&L figures for firms to sell shares to the public restricting even more, younger companies to list.

⁷⁵Having said that, no comfort letter was required from the auditors as this is the practice in other bourses.

- c. By public offer for subscription for the purchase of titles which have not been issued yet or allocated
- d. By private placement – an offer is made to specific investors for the sale of shares that have already been issued or are about to be issued.

In the case where the offer for sale to the public was chosen, then the issue had to be fully underwritten by at least one underwriter which had to be approved by the Council of the Cyprus Stock Exchange. Underwriting meant that the underwriters must stand by to purchase the unsold portion of the issue at the offer price less their fees⁷⁶. For their assistance the underwriters receive a fee for underwriting and distributing the IPO.

The offer price⁷⁷ is set by the lead manager of the issue who was also the lead underwriter⁷⁸. The approach used to arrive at the offer price is one that utilises the price-earnings multiplier. That is, after determining the appropriate price-earnings (P/E) ratio of the issuing firm given its comparison to its peers, and after projecting its future earnings per share (EPS), the offer price is estimated as the product of the P/E ratio and the EPS. The prospectus includes comparative data on the issuing firm's and its industry's P/E ratios⁷⁹ and the firm's EPS forecasts⁸⁰ so that investors can form an independent opinion of the pricing of the issue.

⁷⁶ The CSE did not grant its approval for a listing until an underwriting agreement was in place, properly signed by all parties.

⁷⁷ The great majority of IPOs in the CSE, were executed through a fixed-price offering. In a fixed-price offering, shares are offered to all categories of investors, private and institutional, at a single and unchangeable price set in advance by the underwriter and filed in the introduction prospectus. Investors submit their applications for shares at the fixed price and rationing rules (possibly random but most often pro rata) are used to allocate shares. Fixed price offerings exist in all European countries except Austria, Greece, Finland and Spain. Specific terminology is used in the UK, where any IPO for which shares are offered to the public, either through a fixed-price offer or through an auction, is called an 'offer for subscription' if new funds are raised and 'offer for sale' if not.

⁷⁸ If more than one underwriters were present then they set the price jointly

⁷⁹ In practice, due to lack of data from issuers in same or similar sectors, the P/E ratios employed were those of all the other IPO firms preceding the particular IPO.

⁸⁰ After the CySEC issued a circular on due diligence and the responsibilities of underwriters and issuers alike in July 2001, most of the issuers refrained from using projections in their prospectuses and the valuation was based on trailing P/E ratios i.e., ratios based on audited EPS.

After the offer price was set, the offering period was specified during which investors were invited to subscribe to the new issue. Sometimes, the offering period may be several weeks after the offer price is set. The offering period usually lasts four to five weekdays, but for slow subscriptions it is possible to allow an extension of the offering period. If the offer is heavily oversubscribed, the subscription period finishes as early as at the end of the first subscription day or the next.

To make sure that an investor was allocated the desired amount of shares, investors usually subscribed for a multiple of the number of shares they really wished to buy⁸¹. Then the final allocation was done on a priority basis. The allocation rule was described in the public announcements that called investors to subscribe as well as in the prospectus. Investors subscribed at the bank branches or stockbrokers as specified in the offering announcement. Following the successful offering of the issue, formal listing and public trading of the issue usually occurred about a month after the end of the offering period.

Most of the IPOs in the CSE also included a private placement portion, whereby, shares were offered to a group of investors including suppliers, clients, personnel and other parties. The number of shares offered in the private placement was added to the existing number of shares in the calculation of the shareholder dispersion rule of 25%.

Historical financial statements in the accounts of CSE IPO companies were adjusted according to CSE regulations and the relevant accounting reporting standards relevant to public reporting engagements on historical information. Cyprus companies officially adopted IFRS on the 1st of January 2005 for consolidated accounts but a number of firms also adopted IFRS voluntarily before.

⁸¹ *Many investors subscribed to IPOs through various names such as their spouses, companies, children so that they raise the possibility of being allocated more shares than if they had applied on their own.*

IV. Research Design

A. Sample selection procedure

In this section of the chapter, the description of the sample including descriptive statistics is presented. Moreover, the data sources are mentioned, the process of gathering the data as well as the criteria for selecting the companies in the sample are laid out.

i. Selection criteria – sample period

During the period 1997-2002 a total of 124 firms⁸² were listed in the Cyprus Stock Exchange, out of which 79 were included in the final sample for short- and long-term price performance investigation (see chapter 1 of this thesis). This period was chosen for the following reasons:

- The CSE was inaugurated on the 29th of March 1996 and the first IPOs took place in 1997.
- The period 1999-2001 is characterized by a ‘flood’ of new listings and abnormal returns, largely in the primary, but also in the secondary market. From 2002 and up until November of 2006 there were no IPOs in the CSE.
- During the period 1997-2002, Cypriot society is characterized by a significant amount of socioeconomic changes as well as changes in the political, legal and fiscal front which inevitably imparted on investor psychology and stock market economics.

The criteria employed in selecting the companies comprising the sample for this chapter are based both on local constraints as well as on international practice. These are as follows:

- a. The companies must have been listed in the CSE over the period January 1997 to December 2002.

⁸² It is worth mentioning that during the period 2000-2004, 87 firms withdrew their listing application from the CSE and a further 46 applications for listing were rejected by the authorities. Thus, bringing the total number of companies attempting a listing but not succeeding eventually, to a staggering 133 firms.

- b. The companies listed employed the method of initial public offering to the public, with opening and closing dates of the offering period for new shares (companies which placed already issued shares have already been excluded from the sample).
- c. Investment companies (both closed-ended and private equity) and overseas companies are excluded from the sample.
- d. The companies in the sample must not have been delisted from the CSE at least for a period of 12 months from the date of listing.

In addition to the above criteria which narrow the sample down to 79 IPO firms, the following criteria for selecting the final sample to test the earnings management hypothesis which is developed at a later stage are employed. The following cases are excluded:

- Financial services companies in general (including insurance companies).
- Companies that have undergone considerable restructuring before going public i.e., firms that their financial statements at t_0 and t_{-1} are not directly comparable.
- Companies that changed their accounting year-end.
- Companies for which there are not sufficient accounting data to perform relevant tests including, balance sheet items such as creditors, debtors and inventory and also income, sales and cash flow items from profit and loss and cash flow statements respectively.
- Companies that their IPO date took place at t_1 instead at t_0 (see figure 11)⁸³.

Applying the above criteria to the sample of 79 IPOs in the CSE over the research period (1997-2002), a final sample of 46 is reached, which represents 37% of the total number of companies listed on the CSE over the same period. Table 22 below shows the screening process that was followed to arrive at the final sample.

Insert Table 22 – Sample selection

⁸³ For a small number of CSE IPOs (13), the time that lapsed between the last year of audited accounts in the prospectus (t_{-1}) and the IPO date is more than one year (i.e., 365 calendar days). This means that they were listed at t_1 .

Table 23 below shows the distribution of the 46 IPOs according to their industrial sector⁸⁴.

Insert Table 23 – IPOs per industrial sector

ii. Procedure for collecting data

Data were hand-picked by the author from the prospectuses of IPO firms as well as their annual accounts which were retrieved either in hardcopy or in electronic form⁸⁵. IPOs in the CSE were obliged by law to present in prospectuses three years of balance sheet and cash-flow statement data and five years of P&L data. Therefore, the most one can go back without sacrificing any data from all three financial statements is three years.

B. Methodology

i. The IPO financial reporting timeline and benchmarks

The usual timeline with respect to financial reporting in IPOs in developed countries is shown in figure 11 below. The fiscal year of the IPO is defined as year t_0 . Year t_0 is the year that firms go public so for part of the year firms are privately held and for part they are publicly owned. The length of the public and private parts is variable. A list of the studies that measure discretionary accruals in year t_{-1} or in year t_0 is shown in figure 11 below. Many studies on earnings management of IPO firms use the first annual audited report following the IPO (i.e., year t_0) for their analysis. A smaller number use the last annual report prior to the issue (year t_{-1}), i.e., the audited financial statements in the prospectus. Ball and Shivakumar (2006) argue that if companies opportunistically attempt to influence the selling price of their stock, then

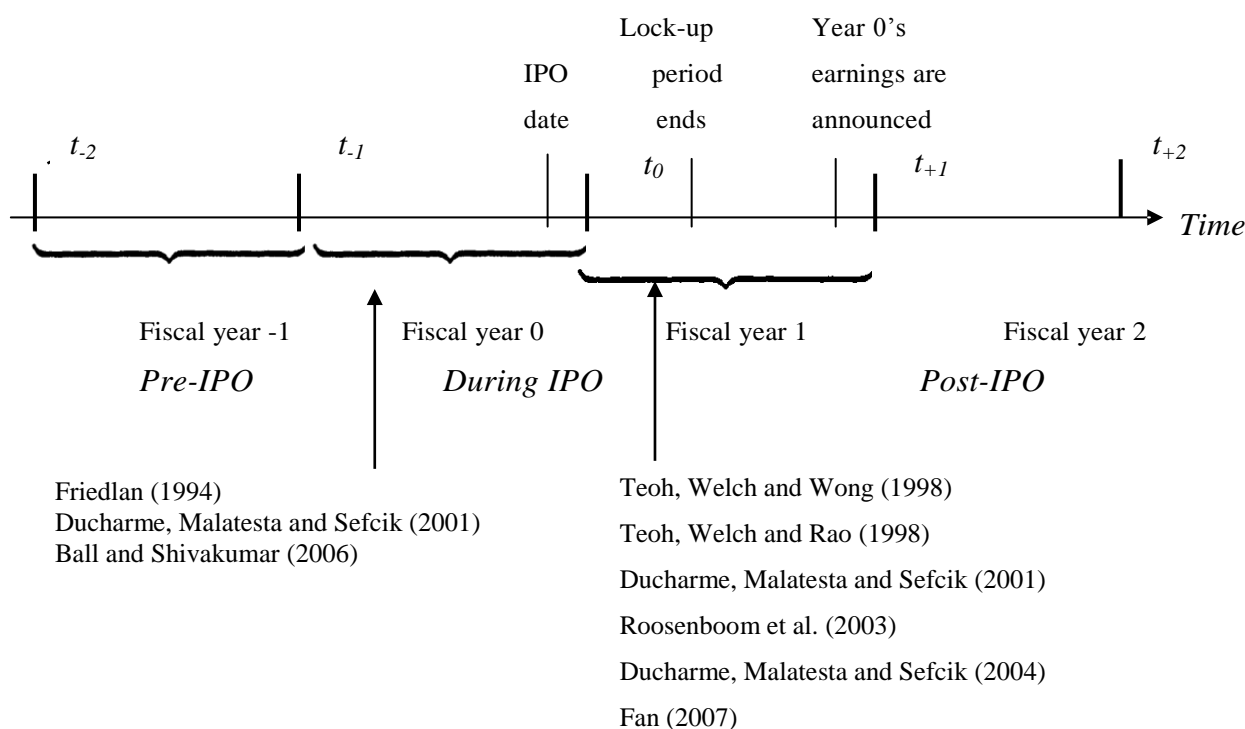
⁸⁴ The industrial sectors are presented as classified at the time of the research period by the Cyprus Stock Exchange.

⁸⁵ Annual accounts especially for the early years (1997-2000) are not easily available as these companies used predominantly hard copies at the time. Electronic means were widely employed after 2003.

they will try to manipulate the financial statements available to investors before and not after the issue, and that therefore year t_{-1} statements must be examined.

Year t_0 statements are published after the offering, which is too late to influence the selling price. On the other hand there are logical and practical reasons to examine year t_0 financial statements. If the issue occurs towards the end of the fiscal year, investors might give more weight to the unaudited reports up to the issue date than to the annual reports of the prior year. Then, if investors' focus is on year t_0 unaudited reports, and if the issuing IPO firm attempts to influence the issue price by inflating its reported earnings, it will apply the discretion to the latter reports. It is then reasonable to believe that the issuing firm will not rush to reverse the discretionary accruals because doing so in close proximity to the issue date will most probably attract the attention of the regulators, and that therefore year t_0 should be examined.

Another argument for focusing on year t_0 statements is that it is common practice for the original shareholders to commit to hold (lock up) their shares for 180 days after the issue. If the original shareholders' goal is to influence the stock price when the lock-up expires so they can sell their holding at an inflated price, then they will apply their discretion to year t_0 statements. Moreover, if the goal is to influence the statements of year t_0 , IPO firms might have an incentive to lower the reported earnings in year t_{-1} so that the year-to-year improvement is larger. Therefore, it is reasonable to assume that firms manage both years (i.e., t_{-1} and t_0)

Figure 11 - The typical timeline of IPOs

As shown in figure 11 above, firms go public during year t_0 . The last set of annual audited financial statements provided in the prospectus, are those for the year t_{-1} .

As far as CSE IPOs are concerned over the period examined, one needs to note the following important differences with IPOs in other developed (mainly) markets:

- there were no shareholders' lock-ups,
- due diligence was not obligatory (actually no one conducted due diligence – not before August 2001 that became compulsory after CySEC regulation)
- most of the companies that were eventually listed had already issued, through private placement, shares and received substantial funds from investors before the IPO. In almost all IPOs, investors participated at the same effective price as the investors in the private placement did. Therefore, the price was set well before the IPO for most of the firms. The CSE demanded that the offering price was set in the prospectus when applying and could not be changed.
- A number of owners/issuers guaranteed the IPO price to certain investors for various reasons (e.g., purchasing an asset and paying with IPO shares, or being a creditor and getting paid with IPO shares, or rewarding employees).

In this thesis, it is hypothesised that CSE IPO firms managed earnings prior to listing as the prospectus was the only official document available to underwriters and investors, (a few of which had already invested in these companies through private placements and also for prospective investors who were about to invest in the IPO⁸⁶). Therefore, earnings management will be investigated with reference/benchmark time t_{-1} and both *pre*-IPO and *post*-IPO time frames will be examined i.e., t_{-3} and t_{-2} and t_0 , t_1 and t_2 respectively.

ii. *Model specification*

1. Detecting earnings management

It is widely accepted that the price at which shares of an IPO are sold to the investor public has a significant wealth effect on the issuers of the securities. A higher offering benefits issuers in two ways. Firstly, shares retained by the owners are worth more and secondly, more cash is received for the secondary shares sold⁸⁷. Initial public offerings differ from other equity transactions in that in an IPO there is no market price available to investors to refer to when issuers and underwriters set the price. Therefore, it becomes obvious that the price will be set on evaluation based on information that basically is derived from the financial statements found in the prospectus⁸⁸. Academic evidence indicates that IPOs are priced using input from financial statements (DeAngelo 1986; Block 1986; Perez 1984, Hughes, 1986; Krinsky and Rotenberg, 1989; Ducharme et al, 2004).

The use of accounting information in conjunction with comparable firm multiples is widely recommended in valuing IPOs (Titman and Trueman, 1986; DeAngelo, 1986; Kim and Ritter, 1999). Ronen and Yaari (2008) argue that earnings are valuable in

⁸⁶ For many investors, the prospectus is likely to be the most cost-efficient means of obtaining information about an IPO. The prospectus is the only official document that can be distributed by the issuers before the listing, and because most IPO firms are small, often little information is readily available from other sources for investors to evaluate; and a large part of the prospectus is the financial statements.

⁸⁷ By having a higher share price issuers who issue new shares only can own a larger share of a fixed sized pie or own the same share of a larger pie if they decide to sell a specified fraction of the firm i.e., sell existing shares.

⁸⁸ Rao (1993) reports that there is almost no news coverage of firms in the years before the IPO. This scarcity of information about the issuer forces investors to rely heavily on the prospectus.

three counts. First, they pass the ‘market test’. When savvy investors consider buying the share of an IPO, they demand to know earnings so that they can use them to evaluate the price. Secondly, they argue that earnings form a base line for future assessments to judge the firm’s growth. Thirdly, they argue that earnings are important in providing investors grounds to pursue litigation if they believe that they have been misled.

It becomes apparent that earnings are quite relevant in an IPO. Given the fact that there exists an informational asymmetry between the various parties in an IPO, with issuers and underwriters being at an advantageous position vis-à-vis the investors, one can reasonably assume that earnings are manipulated/managed to influence investors. Several studies have examined earnings reporting around IPOs. Aharony et al. (1993), Friedlan (1994), Ducharme (1994), Teoh et al (1998a) and Teoh et al. (1998b), Roosenboom et al. (2003), all report empirical evidence that suggests earnings are managed in anticipation of going public.

However, the legal environment for IPOs imposes costs on issuers for misrepresenting their firms’ prospects. Ducharme et al. (2001) argue that at least three(3) types of costs are associated with the manipulation of reported earnings, namely, litigation costs, diminution of personal and corporate reputations, and loss of future accounting flexibility.

The earnings management instruments used for manipulating reported numbers consist of (a) real operating decisions (e.g., asset sales and change in R&D expenditure) and (b) pure financial reporting decisions (e.g., changes in accounting method such as changing from accelerated depreciation to straight-line depreciation and accrual choices). Young (1999) argues that accrual choices are widely employed because they are relatively low cost mechanism by which managers can affect reported numbers and are by nature opaque. Friedlan (1990) states that using accounting policy to manage accounting information of IPOs is not effective since underwriters and auditors can easily undo its effects. Investors who have the means and wish to incur the costs, can adjust accounting policies given the requirements for disclosure of accounting policies and information.

In contrast, accruals appear to be a more subtle accounting tool and therefore, provide for a more effective method for managing earnings and ultimately the IPO offer price. Changes in accruals are more difficult to detect than changes in accounting policies since changes in accruals are not the subject of disclosure in financial statements and do not require a qualification in the auditors' opinion. Underwriters and auditors may have difficulty detecting changes in discretionary accruals as it is not always clear whether observed changes are manipulations or are appropriate approaches to reporting events. DeAngelo (1986) also argues that preparers of financial statements have incentives to conceal any accounting manipulations. She argues that greater payoffs accrue to those whose manipulations are undetected by the parties who could be adversely affected by them.

Total accruals which consist of discretionary accruals (DA) and non-discretionary accruals (NDA) are normally used to measure earnings management. McNichols (2000) refers to this approach as the aggregate accruals approach. Total accruals are decomposed into a discretionary and non-discretionary component⁸⁹. The reason that DA have to be estimated from total accruals is because the degree of accruals management is not directly observable (Teoh et al., 1998a). It is difficult for investors to infer how much of the accruals are discretionary. Elgers et al. (2003) argue that “...a fundamental issue in assessing earnings management is the unobservability of the managed and un-managed components of reported earnings.”

Several alternative models of expected accruals have been employed in the extant literature to detect earnings management or abnormal accruals. Ronen and Sadan (1981) investigate the smoothing of ordinary income. Healy (1985) uses the level of total accruals to measure earnings management and requires the assumption that NDA are stable over time (i.e., change in total accruals = change in discretionary accruals). By contrast, DeAngelo (1986) model focuses on changes in total accruals. The DeAngelo model assumes that NDA follow a random walk, so the change in total accruals between the benchmark and test periods is assumed to be discretionary. Friedlan (1994) argues that this random walk approach is not valid for IPOs since these firms are usually growing and this may affect their accruals. Friedlan also

⁸⁹ For a definition of accruals please see Appendix C

argues that if growth is ignored, then a change in total accruals which is attributed to the firm's managers may in fact be due to changes in NDA caused by growth. Therefore, his model assumes that the change in total accruals between two periods is composed of two components namely, the change due to firm growth and the change due to the owners/managers discretion. Friedlan finds evidence that IPO firms make income-increasing discretionary accruals in the financial statements released in the prospectus before the IPO.

The most frequently used models for separating expected and discretionary accruals are the Jones model (Jones, 1991) and the modified Jones model (Dechow et al., 1995)⁹⁰. The Jones model assumes that two variables, namely, the level of gross property, plant and equipment (GPPE) and the change in revenues (Δ REV), account for the level of unmanaged accruals occurring due to the firm's economic transactions. The level of GPPE determines depreciation expense while Δ REV implies changes in working capitals accounts.

The Jones model regresses total accruals on GPPE and Δ REV. The regression provides coefficients that are then used to estimate unmanaged accruals (or NDA). The regression residuals are considered to be managed accruals (or DA). The original tests of the Jones and modified Jones models were performed longitudinally over firms with sufficient time series data to estimate firm specific coefficients. These coefficients were then used to estimate DA for a particular year. Subsequently, many studies have estimated these models cross-sectionally (e.g.,

⁹⁰ Although the modified Jones model is the primary method of calculating discretionary accruals in the literature, there are a number of concerns with estimates derived from this model. One of these concerns, which is likely to be particularly acute in IPO firms, is the effect of extreme operating performance on estimates of discretionary accruals. Kothari et al. (2005) find that the modified Jones model rejects the null hypothesis of no earnings management too often in firms with extreme operating performance and propose a performance matched model which entails matching a firm suspected of managing earnings with a peer firm in the same year and industry with similar operating performance. Another concern with the modified Jones model that is specific to the IPO setting, is the common practice of scaling by prior period assets. Ball and Shivakumar (2008) note that studies examining earnings management around the IPO traditionally scale by prior period total assets. They point out that this common practice is problematic when estimating IPO-year accruals since prior period (i.e. pre-IPO) total assets are relatively small and not representative of the asset base following the IPO. Deflating by prior period total assets will therefore tend to produce extremely large estimates of discretionary accruals in the year of the IPO (i.e. discretionary accruals in the fiscal year of the IPO will appear large relative to prior period total assets).

Teoh et al, 1998; DuCharme et al., 2000) and using paired data (e.g., Heninger, 2001).

Finally, other studies examining the prevalence of earnings management in order to avoid reporting losses and/or earnings declines have adopted an additional approach to test for earnings management. Burgstahler and Dichev (1997) examine the distribution of earnings changes and reported earnings. They find a higher frequency of firms with slightly positive earnings (or earnings changes) than firms with slightly negative earnings (or earnings changes). This approach is considered more objective in terms of detecting the prevalence of earnings management than the other methods discussed. Conversely, this approach has failed to disclose the extent of earnings management and the specific methods or accruals that are used for earnings management (Healy and Wahlen, 1999).

2. Hypothesis development

Two hypotheses will be tested as far as earnings management detection is concerned, namely:

Pre-IPO (i.e., up to and including t_{-1})

H_{01} - Issuers planning to go public manage their earnings by making income-increasing accruals in the periods before the IPO.

This is reflected in discretionary accruals (DA) but also in total accruals (TA). Moreover, earnings are expected to increase in year t_{-1} (the benchmark year), because as described above, issuers who report higher earnings stand to receive a higher valuation for their firm's IPO. Of course, earnings could be increasing since IPO firms are usually successful and growing firms that seek to capitalise on this aspect. Therefore, it is not necessary for issuers to be making income increasing accruals before going public to have earnings increases. However, changes in cash flows between periods are informative as to whether changes in earnings are related to changes in cash flow or changes in accruals. It is not possible though to formulate an expectation about the direction of the change in cash flow from operations in the

periods before the IPO because of the conflicting effects of increased profitability and the need for growing firms to invest to support expansion.

Post-IPO (i.e. after t_1)

H_{02} – Issuers continue to make income increasing accruals at t_0 and t_1 which reverse after t_1 , i.e., at t_2 .

As it has already been established, t_0 is the IPO year (which for part of it, the company is privately owned and part of it, it is publicly held) and t_1 is the first full year of an IPO firm as a public company. Also, a large majority of the CSE IPO issuers sold a large chunk of their companies in private placements before the IPO. Moreover, a number of them exchanged shares with other IPO owners so that they could flip these when listed (cf. barter trade) and a few of them guaranteed the price of the shares to a number of investors over a period of time. Last but not least, as the directors of the IPO companies were practically the only liable for the prospectus contents at the time of the sample, they were careful not to provoke the authorities and/or the investors and thus having a good first financial year (i.e., t_1) as a publicly listed company was deemed necessary to avoid any trouble with authorities and investors alike.

3. Definition of discretionary accruals measure

The estimation of discretionary accruals is based on the model developed by Friedlan (1994) and DeAngelo (1986). The method compares accruals in a *test* period with accruals in a *benchmark* period and attributes deviations from the benchmark measure to accounting discretion. In order to account for the growth that usually exists in IPO firms, total accruals must be proportionally controlled with sales in successive periods. Specifically, the amount of total accruals that is attributable to discretion is the difference between total accruals in the test period standardised by sales in the test period and total accruals in the benchmark period standardized by sales in the benchmark period.

Formally,

$$\text{TACCR}_{jt} = \text{NI}_{jt} - \text{CFO}_{jt} \quad (11)$$

where,

$\text{TACCR}_{j,t}$ is the managed component of earnings for IPO sample firm j , during time period t , which is equal to total accruals.

$\text{NI}_{j,t}$ is the reported net income before extraordinary items for IPO sample j , during time period t .

$\text{CFO}_{j,t}$ is the cash flow from operations for IPO sample firm j , during time period t .

Equation (11) above is also deflated by $\text{TA}_{j,t}$ which are the total assets for IPO sample firm j , during time period t ⁹¹ and Total Assets net of Cash, $\text{TANoC}_{j,t}$.

Moreover, discretionary accruals are defined as follows:

$$\text{DA}_{\text{test}} = \frac{\text{TACCR}_{\text{test}}}{\text{Sales}_{\text{test}}} - \frac{\text{TACCR}_{\text{benchmark}}}{\text{Sales}_{\text{benchmark}}} \quad (12)$$

where,

benchmark period is t_{-1} and test periods are t_{-3} , t_{-2} , t_0 , t_1 and t_2 . Discretionary accruals are also deflated by Total Assets and Total Assets Net of Cash.

⁹¹ We avoid deflating by prior year assets, since this is problematic as Ball and Shivakumar (2008) and Armstrong and Foster (2009) point out. Prior-period total assets, especially prior to the IPO, are relatively small and not representative of the asset base following the IPO. Moreover, in the case of CSE IPOs, since many of the IPOs conducted private placements prior to the IPO, it is considered as more appropriate the use of the actual year assets as more representative for the sample calculations.

4. Definition of earnings performance measures

Earnings performance measures are employed surrounding t_{-1} (the benchmark year) as return on total assets (ROA) and return on sales (ROS), to document evidence of earnings management for the sample.

$$PM_{j,t} = \frac{NI_{j,t}}{X_{j,t}} \quad (13)$$

where,

$PM_{j,t}$ is the earnings performance measure (ROA or ROS) for IPO sample firm j , at time t .

$X_{j,t}$ is either $TA_{j,t}$ or $Sales_{j,t}$ depending on the earnings performance measure calculated. Return on total assets net of cash (ROANoC) is also calculated separately by subtracting the cash and cash equivalents from $TA_{j,t}$ when calculating ROA^{92} (i.e., $ROANoC_{jt} = \text{Net Income}_{jt} / (\text{Total Assets}_{jt} - \text{Cash}_{jt})$).

The three earnings performance measures are compared at the benchmark time (t_{-1}) with the measures in each of the two preceding years (t_{-3} and t_{-2}) and each of the three succeeding years (t_0 , t_1 and t_2). This is to distinguish between growth and earnings management. IPOs are usually growth firms and therefore, a distinction needs to be made for *pre-* and *post-* benchmark periods. Moreover, the benchmark period with the average of the rest of the years (t_{-3} , t_{-2} , t_0 , t_1 and t_2) are compared as follows:

$$(PM)_n = PM_{tb} - \text{Average of } PM_{in} \quad (14)$$

where,

⁹² As it has been documented especially for Asian IPOs, issuers retain large amounts of IPO proceeds on deposit after floatation. As Aharony et al. (2000) suggest a more accurate adjustment would be to subtract the unused IPO proceeds. However, this kind of data is not available.

PM is the performance measure tested (ROS, ROA or ROANoC),

n takes the time frame of *all* (t_{-3} , t_{-2} , t_0 , t_1 and t_2) or *pre* (t_{-3} and t_{-2}) or *post* (t_0 , t_1 and t_2)

and,

t_b is the benchmark year (t_{-1}).

5. Definition of components of accruals

Motivated by the work of Dechow et al. (1998) and Barth et al. (2001), accruals are disaggregated into major components namely:

- a) accounts receivable, (Rec)
- b) accounts payable (Cred)
- c) inventory (Invent)
- d) depreciation (Dep).

According to Barth et al. (2001) aggregate earnings and thus aggregate accruals mask the information that is contained in components of accruals. Therefore, by disaggregating earnings into cashflow and the components of accruals enhances the predictive ability of earnings relative to aggregate earnings.

Working capital is comprised of stocks and debtors minus creditors. Therefore, an increase in working capital investment will decrease net income at least in the short run. Working capital rises when Stocks and Debtors rise and creditors fall. On the contrary, when working capital investment falls, net income rises at least in the short run. Working capital investment declines when stocks and debtors decline and creditors rise. Therefore, a firm could manipulate earnings by manipulating its working capital investments accordingly. Regarding depreciation, when this decreases it affects expenses and therefore, short-run income rises. Also, increased depreciation means increased investments and thus leads to a decrease in short-run net income.

6. Testing

Univariate tests are conducted for the difference in return on sales (ROS), return on total assets (ROA), return on total assets net of cash (ROANoC), net income (NI), discretionary accruals (DA), total accruals (TACCR), and cash flow from operations (CFO), at various times (t_{-3} , t_{-2} , t_0 , t_1 and t_2) with the benchmark time being t_{-1} . The hypothesis of accrual management is then tested by determining whether the change in estimated discretionary standardised accruals (DA) is different from zero. Equation (14) above is also tested whether is statistically different from zero for the variables ROA, ROS, ROANoC, and TACCR between the benchmark year (t_{-1}) and the rest of the years t_{-3} , t_{-2} , t_0 , t_1 , and t_2 , all deflated by sales, total assets and total assets net of cash.

t- and *non-parametric*⁹³ statistics are employed to test if the mean and median respectively of these differences for the sample IPO firms are statistically different from zero. The reason for using also non-parametric statistics is because of the small sample size and also the presence of outliers in accruals.

C. Earnings management and short- and long-run IPO stock performance

Empirical studies that focus on the relationship between earnings management and IPO performance began to appear in the late 1990s (e.g., Teoh et al., 1998a; Teoh et al., 1998b; DuCharme et al., 2001, 2004; Roosenboom et al., 2003). Teoh et al. (1998a) examine whether issuers of IPOs increase accruals and thereby report earnings in excess of cash flows prior to IPOs. They also examine whether discretionary accruals predict the cross-sectional variation in post-IPO long-run stock performance. They find evidence that issuers with unusually high accruals in the IPO year experience poor stock return performance in the three years thereafter. Moreover, they argue that investors may be misled by high earnings numbers reported at the time of IPOs and then put too high a price in the new issue. They suggest that increasing the offer price is the primary incentive for earnings management at the time of the IPO.

⁹³ We employ the Wilcoxon sign-rank test statistic

Teoh et al. (1998b) study the magnitude of accruals in the IPO year and several years after. They find that IPO companies have on average high positive earnings performance and abnormal accruals in the IPO year. They also find that earnings and stock performance are both poor in the long-run. They report that the post-IPO earnings performance is significantly below the industry average, predicted by high abnormal current accruals during the IPO year. In line with Teoh et al. (1998a) they find that abnormal accruals in the IPO year predict greater post issue stock return performance. DuCharme (2001), also find a significant relationship between abnormal accruals and post IPO stock returns. However, they do not find a significant negative relationship between abnormal accruals and post-IPO accounting performance.

Roosenboom et al. (2003) was the first earnings management study in Europe. They examine the pattern of discretionary current accruals (DCA) using a sample of Dutch IPOs. Their findings conclude that managers manage their companies' earnings in the first year as a public company (t_0) but not in the years before the IPO. Their result is consistent with earlier findings of Teoh et al (1998a) who also report that IPO companies in the US make income increasing accruals in the first year as a public company, and Aharony et al (1993) who find little evidence of earnings management of US IPOs in the years before going public.

They also investigate the impact of earnings management on the long-run stock price performance and find a negative relationship between the size of the DCA in the IPO year (t_0) and long-run stock price performance over the next three years. Their results indicate that IPO managers who over report earnings in the IPO year subsequently suffer poor returns.

DuCharme et al. (2004) study the relation amongst earnings management, stock offers, post-offer stock returns and related shareholders lawsuits in IPOs and SEOs. They find that abnormal accounting accrual measures of earnings management are unusually high around stock offers and tend to reverse subsequently, and are inversely related to post-offer stock returns. They report that abnormal accounting accruals are especially high for companies whose offers subsequently attract lawsuits. Sued companies are found to have much lower stock returns as compared

to non-sued counterparts. They suggest that some companies opportunistically manipulate earnings upwards before stock issues, thereby exposing themselves to litigation.

Nagata and Hachiya (2007) use abnormal accruals as a proxy to measure earnings management and examine whether the extent of abnormal accruals has any impact on offer price. They find that offer prices reflect earnings management to some extent. IPO firms that manage earnings less aggressively than the average IPO firms in the pre-IPO period tend to have higher offer prices. Their results also show that underwriters are more likely to discount the issues when IPO firms manage earnings aggressively but fail to report consecutive earnings increases in pre-IPO periods.

Shen et al. (2008) argue using behavioural theory that IPO anomalies (underpricing and long-run underperformance) are attributed to investor sentiment. Ljungqvist et al. (2006) argue that a class of investors are at times irrationally exuberant about the prospects of IPOs. Stocks underperform in the long-run when exuberance fades. Barberis et al. (1998) develop a model of investor sentiment that uses cognitive bias of representativeness in which investors extrapolate short past histories of good performance into the future, thus overpricing these companies leading to overreaction. The authors also argue that past financial performance provides this source of sentiment. Their model also relates to conservatism which is the slow updating of models in the face of new evidence.

Earnings are an important and integral measure of firm performance and critical to the IPO process. Given that the pricing of a new issue is very closely related to some earnings measure, there is good reason for IPO proceeds-maximising issuers to deceive investors by opportunistically manipulating earnings through accruals management. Accordingly, investors who focus on past performance would overvalue an issue, whereas investors who analyse both an IPO's past performance and peer performance would adjust for potential manipulation not to overpay. Therefore, if investors are all rational then there should be a negative rather than a positive relationship between accruals and IPO underpricing.

On the other hand, as Beatty and Ritter (1986) posit, underwriters can earn a return on their reputations from appropriately pricing new issues. If underwriters fail to adjust for the effect of earnings management they may end up overpricing the IPO firm with overstated earnings. Overpriced IPOs could result in under-subscription and conclude with unsold shares, which would substantially damage the underwriters' reputations. Therefore, they have an incentive to price issues by examining the financial statements carefully and underprice the issues when they detect the evidence of earnings manipulation.

It follows from the above that the relation between the use of earnings management and IPO underpricing is not straight forward.

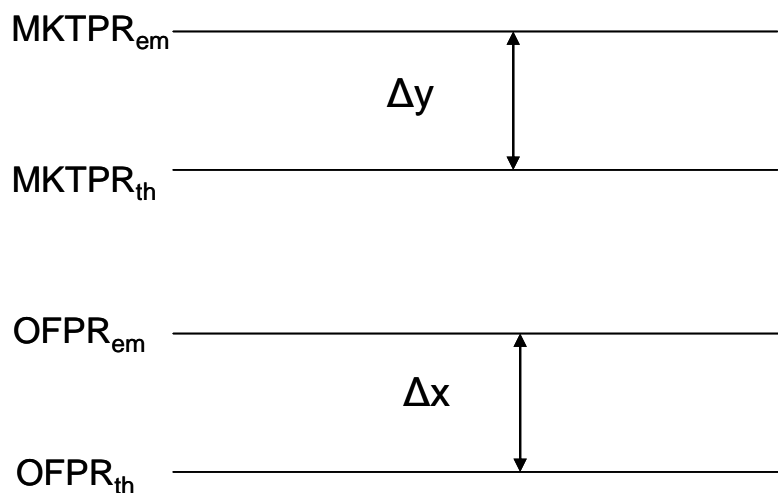
i. Hypothesis development

1. Short-run performance

The period 1999-2001 in the CSE history, is characterised by irrational exuberance⁹⁴. Moreover, underwriters, issuers and investors alike were all inexperienced. This coupled with the lack of sufficient regulatory framework (vis-à-vis due diligence and underwriters' and other certifying agents recourse) and the short life span of the CSE shaped a setting whereby one could argue that underwriters valued these IPOs without making any adjustments for the income increasing accruals that may have existed. On the other hand, neither did investors seem to adjust the price in the secondary market because of the irrational exuberance that existed which was fuelled both from the secondary market and the primary market returns. Figure 12 below aims at explaining this.

⁹⁴ *The Economist* 'Med Sea Bubble', 21st of October 1999, and *Time International* 'Market Mania', 13th of September 1999.

Figure 12 - A graphical representation of the hypothetical adjustment process in CSE IPO underpricing with and without earnings management and with and without investor adjustment



Assume that $OFPR_{th}$ is the theoretical price that the underwriter will set for IPO firm A and $OFPR_{em}$ is the offering price with income increasing accruals present. $MKTPR_{th}$ is the theoretical market price of the close of the first day for IPO A and $MKTPR_{em}$ is the closing market price of IPO Firm A assuming that investors do not adjust their valuations for the presence of income increasing accruals. Δx and Δy is the rate of adjustment due to income increasing accruals by underwriters and investors respectively. For Δx to rise then accruals must increase and underwriters not adjusting their valuations. For Δy to rise, investors must not adjust/revise their valuations for the existence of these accruals, consequently pushing the price upwards in the secondary market. So, as Δx rises then underpricing becomes less assuming investors remain rational or $\Delta y \rightarrow 0$ or $\Delta y < \Delta x$. As the 'irrationality' or incapability of investors to adjust for the accruals present in the earnings of IPO firm A rises, so is Δy and consequently $MKTPR_{em}$ and underpricing as well. Therefore, the relationship depends on the rate by which underwriters increase/revise their valuation of firm A versus the rate by which investors adjust theirs. Therefore, the degree of earnings management affecting the level of underpricing will depend on the relative size of Δx vs. Δy . For underpricing to have a positive relation with the earnings management variable, underwriters' rate of adjustment for IPO valuations due to income increasing accruals must be less than that of investors i.e., $\Delta x < \Delta y$.

When investors begin adjusting/revising their valuations at a higher rate than underwriters adjust theirs, then, ceteris paribus, the gap closes (i.e., $\Delta y \rightarrow 0$ and $\Delta x > \Delta y$) and the relationship between the first day return and the rate of increase of the earnings management variable (accruals) becomes negative i.e., underwriters overprice issues.

Examining this rate of adjustment in CSE IPOs one should take into account on the one hand, the following:

- investors' irrational exuberance;
- underwriters' learning curve was steeper than investors';

and on the other, the following:

- deficiencies in the institutional framework for listing companies, created very long approving times (almost a year) which combined with,
- fixing of offering prices at application submission;
- the dissemination of information about IPO firms in the market due to the long queue;
- investors were catching up in the experience curve.

Therefore, taking into account the above, one cannot distinguish between the rate of adjustment of IPO valuations due to income increasing accruals that underwriters and investors alike possibly exercised and therefore one cannot posit whether there is a positive or negative relationship between the earnings management variable and first day returns. Taking into account the above, it is postulated that first day returns do not have a straight forward relationship with earnings management.

H₀₃: The relationship between earnings management as this is reflected by the earnings management variable and first-day returns is indeterminate. If $\Delta y > \Delta x$ then the relationship between the earnings management independent variable (discretionary accruals and total accruals) and the dependent variable, which is first day returns, is positive. On the other hand, if $\Delta y < \Delta x$, then the relationship is negative.

2. Long-run performance

The relationship between the use of earnings management and long-term stock performance (12-, 24- and 36-months after the IPO) is less complicated than that in the case of short-run underpricing. The literature on the pricing of discretionary accruals in general shows evidence that the market overprices total accruals and in the long run this reverses. Moreover, it is posited that the components of accruals will also reverse in sign. Thus, higher long term performance will be negatively related to creditors (accounts payable) and positively related to debtors (accounts receivables), inventory and depreciation.

H₀₄: A negative relationship between long-run stock performance and discretionary accruals (and total accruals) is expected, where such performance is measured by Cumulative Abnormal Returns (CARs). Moreover, a negative relationship between long-run stock performance and creditors and positive relationship with debtors, inventory and depreciation is expected.

ii. Definition of variables

The regression equation is shown below:

$$ADRAW_{jt} = \beta_0 + \beta_1 AUD_{jt} + \beta_2 UND_{jt} + \beta_3 LNTAL_{jt} + \beta_4 STDRTNS_{jt} + \beta_5 LEVER_{jt} + \beta_6 LNGPR_{jt} + \beta_7 OFPR_{jt} + \beta_8 EM_{jt-1} + \varepsilon_j \quad (5)$$

where,

Advisor/issue-certifier specific variables

AUD_j is a dichotomous variable taking the value of one (1) if the auditor is one of the big five⁹⁵ reputable auditors, and zero otherwise. Investment bankers have a

⁹⁵ The big five accounting firms at the time were PricewaterhouseCoopers (PWC), Ernst and Young (EY), Deloitte and Touche (DT), KMPG and Arthur Andersen (AA). After Enron filed for Chapter 11 bankruptcy protection on 3rd of December 2001, AA imploded following the admission in front of US Congress by its CEO that Arthur Andersen made an error with Enron's audit. It was barred from conducting audits after August 2002. Eventually, the Arthur Andersen audit business was bought by Deloitte and Touche.

preference for credible auditors since they rely on audited financial statements in certifying the value of the firm and determining whether to underwrite the offering (Balvers, McDonald and Miller (1988)). Reputable auditors are associated with smaller underpricing and higher longer run performance. Reputable auditors are also strong CAs and as such one would expect less earnings management to be associated with firms audited by reputable auditors.

H₀₅: A negative (positive) relationship is hypothesised to exist between auditor reputation and first day IPO returns (long term performance).

UND_j is a dichotomous (*dummy*) variable taking the value of one (1) if the underwriter is one of the three(3) reputable underwriters in the sample, and zero otherwise. Reputable underwriters are associated with smaller underpricing and higher longer run performance. As is the case with auditors, reputable underwriters are also strong CAs and as such, one would expect them to be associated with IPOs that do not manage earnings. Nagata and Hachiya (2007) argue that underwriters are more likely to discount the issues when IPO firms manage their earnings aggressively.

H₀₆: It is hypothesised that prestigious underwriters are associated with lower underpricing and higher long-term returns i.e., a negative (positive) relationship between this variable and first day IPO returns (long term returns) exists.

Market and institutional specific variables

LNTAL_j is the natural logarithm of the time period (in days) from the date of application to the date of listing on the CSE. This variable is a proxy for the available information for a new issue given the fact that the longer the time delays the more the information diffusion to the investor public. In other words, the increase of available information reduces the probability of wrong risk appraisal concerning the issue and as result the need for underpricing becomes less (How, Izan and Monroe (1995) and How and Howe (1994)).

H₀₇: It is hypothesised that a negative (negative) relationship between time span of application for listing date to actual listing date and first day IPO returns (long term returns).

STDRTNS_j is the standard deviation of raw returns that an IPO company registers the first twenty-one (21) days of listing. This variable is a measure of ex ante risk and has been tested extensively in the literature. It controls for momentum in the market.

H₀₈: It is hypothesised that a positive (negative) relationship between this variable and first day raw IPO returns (long term returns).

Issuer specific variables

LEVER_j is the ratio of bank debt to shareholders' equity ratio of an IPO firm based on the last audited accounts in the prospectus. The higher the debt to equity ratio, the greater is the implied ex-ante risk of the IPO firm and therefore the greater the returns. The highly leveraged firms have an incentive to manage earnings aggressively so that they do not jeopardise the success of the public offering. Watts and Zimmermann (1990) suggest that the more levered firm, the more likely that the firm's managers will choose accounting conventions that increase current income.

H₀₉: It is hypothesised that a positive (positive) relationship between the debt to equity ratio and first day IPO returns (long term returns).

IPO specific variables

LNGPR_j is the natural logarithm of the gross proceeds of the issue (i.e., the issue price times the number of shares offered at the IPO) used as a proxy for ex-ante uncertainty. Miller and Reilly (1987), Clarkson and Simunic (1994 and McGuinness (1992) use the total gross proceeds raised from the offer as a proxy for ex-ante IPO uncertainty. Ritter (1984), and Ibbotson and Ritter (1995) provide support for a negative relationship between the size of an issue and the size of the firm and the initial premium. Further, Beatty and Ritter (1986) argue that the smaller the offering the riskier the company and the higher the degree of the uncertainty for high initial premium.

H₁₀: It is hypothesised that a negative (positive) relationship between the size of the issue and first day IPO returns (long term returns).

OFPR_j denotes the euro value of the offering price of the IPO. Much of the literature on earnings management suggests that one of the primary incentives for managers to inflate accruals in IPOs is to boost IPO issue price (Teoh et al. (1998a). If managers systematically inflate earnings in order to inflate issue price, then other things being equal, firms with high levels of accruals are expected to have a higher issue price. The smaller the offering price the higher the risk and the greater both the short- and the long-term returns.

H₁₁: It is hypothesised that a negative (negative) relationship between the offering price of an IPO and the first day returns (long term returns).

EM_j is the variable that controls for earnings management. Discretionary Accruals (DA) are tested as per equation (7) above. The earnings management measure at the benchmark time (i.e., at time t_1) is regressed with returns. As it has already been discussed above in hypothesis H_{03} , it is expected that this variable has a positive relationship with short-term IPO share price performance (ADRAW) if $\Delta x < \Delta y$ and a negative relationship if $\Delta x > \Delta y$. As far as the long-term returns (CAR12, CAR24 and CAR36) are concerned, a negative relationship is expected as discussed in H_{04} . TACCR_j as EM_j is also tested separately as well as the components of accruals, namely CRED_j, REC_j, INVENT_j and DEP_j. In all cases Cash flow (CF) is a control variable at the benchmark time i.e., t_1 .

Therefore,

EM_j = (DA_j) or (TACCR_j) or (CRED_j, REC_j, INVENT_j and DEP_j)

Table 24 below summarises the variables that are employed in the Regression models and their expected relationship (sign) with respect to first-day raw returns and CARs.

Insert table 24 – Variable expected signs in regression models

V. Data Analysis

A. Descriptive statistics

i. Descriptive statistics of variables employed in univariate tests

In this section, descriptive statistics are presented for the variables used in the univariate tests of this study. Tables 25a and 25b below shows descriptive data for the absolute and the deflated values respectively for net income (NI), sales (Sales), cash flow from operations (CFO), total assets (TA), total assets adjusted net of cash (TANoC), total accruals (TACCR), receivables (Rec), creditors (Cred), inventory (Invent), and depreciation (Dep). The data is given representatively for years t_{-3} to t_2 .

Insert Table 25a – Descriptive statistics of variables employed in univariate tests (absolute numbers)

As it can be seen from table 25a, Sales, Total Assets, Total Assets Net of Cash, Receivables, Inventory, Creditors, and Depreciation rise in an uninterrupted fashion from t_{-3} to t_2 . On the other hand, Net Income rises until t_0 and there onwards it declines. TACCR follow a similar path to Net Income. The median of Cash flow from operations declines from t_{-1} to t_1 and then at t_2 it rises abruptly.

Insert Table 25 b – Descriptive statistics of variables employed in univariate tests (deflated)

The variables employed in table 25a are deflated with Sales, Total Assets and Total Assets Net of Cash to get a better picture of their pattern across time. As it can be seen from table 25b, Part A, Net Income rises until t_{-1} and declines here onwards. Total Accruals also rise from t_{-3} to t_0 and then they change direction (i.e., they decline), becoming negative at t_2 . The median of Cash Flow from operations declines from t_{-1} to t_1 and then changes at t_2 when it rises, thus following a different course than Net Income. The components of accruals (i.e., Receivables, Inventory, Creditors and Depreciation) do not exhibit any particular pattern in Part A of table 25b. Looking at Part B of the same table, one gets similar results for Net Income,

Cash Flow from operations, and Total Accruals. However, one can also see that Inventory declines between $t_{.2}$ and t_0 and then starts to rise at t_1 and t_2 . The median of Depreciation also decreases from $t_{.1}$ to t_0 and then rises at t_1 and t_2 . Panel C shows the variables deflated by Total Assets Net of Cash. This panel is more revealing vis-à-vis Cash Flow from operations. Specifically, the median of CFO declines from $t_{.2}$ to t_1 and at t_2 it rises again. This pattern is again in contrast to that of Net Income, which rises from $t_{.3}$ to $t_{.1}$ and declines thereafter.

Tables 26a, 26b and 26c below also present descriptive statistics for the 46 firms in the sample. The descriptive statistics shown are the change in net income (NI), the change in discretionary accruals, the change in total accruals, the change in cash flow from operations (CFO), and the change in the profitability measures of ROS, ROA and ROANoC all calculated having as reference point (benchmark) time $t_{.1}$.

**Insert tables 26a - Descriptive statistics of variables employed in univariate tests
(deflated by sales)**

**Insert tables 26b - Descriptive statistics of variables employed in univariate tests
(deflated by total assets)**

**Insert tables 26c - Descriptive statistics of variables employed in univariate tests
(deflated by total assets net of cash)**

As it can be seen from table 26a, discretionary accruals, net income, total accruals and return on sales are all growing *pre*-IPO. Interestingly, looking at the winsorised means DA and TACCR continue to increase until t_1 and then at t_2 they decrease. The same can be said for TACCR for table 26b and 26c, but not for DA. DA increases until $t_{.1}$ but decreases afterwards in both tables 26b and 26c. CFO does not seem to have a particular path or trend. Net income rises up until t_0 and then declines at t_1 and t_2 across all tables. The profitability measures rise from $t_{.3}$ to $t_{.1}$ and decline thereafter.

The model employed to estimate discretionary accruals (DA) in this thesis is based on the assumption that firms seeking an IPO are growing. Evidence supporting this assumption is given in table 27 below.

Insert table 27 – Sales growth statistical test

Table 27 above shows that between years t_{-1} and t_0 firms have a mean sales growth of 33.9% with a median of 22.7%. Moreover, between the same time period, 91.3% of the companies in the sample are increasing in size (as evidenced by the increase in sales). The number of companies that increase in size steadily rises from t_{-3} to t_0 and thereafter demonstrates steady decline (t_0 to t_2). This is reflected by the median of the growth rate, but the mean shows steady rise indicating the presence of large outliers. If the variables are winsorized at 95th and 5th percentiles then both the t-test and the Wilcoxon test statistics are significant at the 1% level at all time frames.

ii. Descriptive statistics of variables employed in multivariate tests

In this section, the descriptive statistics that are employed in the multivariate model of the study are employed.

In Table 28, Panels A to D, the descriptive statistics for the independent variables are presented and Panel E shows the descriptive statistics for the dependent variables.

Insert Table 28 – Descriptive statistics of regression tables

Looking at table 28 above, one can observe the high level of underpricing in the sample (158.8%) and the long-run underperformance of the IPOs in the sample with mean CARs reaching -20.2% three years after their listing. Moreover, the firms in the sample are highly leveraged with a mean of 89.5% and a median of 69.9%. Moreover, the offering price mean is €0.920 with a median of €0.854 (or CY£0.50). It can also be observed that both Discretionary Accruals (DA) and Total Accruals (TACCR) are rising from t_{-2} to t_{-1} across all deflators and so are their medians. In addition, the components of accruals (creditors, inventory, and receivables) are also rising from t_{-2} to t_{-1} . Their medians are also rising across all deflators except in the

case of Cred/Sales where the median changes sign (i.e., becomes positive), showing that large outliers exist. Finally, depreciation also seems to be rising when deflated by total assets or total assets net of cash but not when it is deflated by sales.

B. Empirical results

i. Univariate tests

In this section, the results of the empirical tests are presented, beginning with the univariate tests. Table 29 below shows the results of the tests for H_{01} and H_{02} . It presents the results with variables scaled with sales, total assets total assets net of cash.

Insert table 29 – Univariate tests for profitability and accruals

The above table shows that the change in ROS is statistically significant at the 1% level at all time frames compared to the benchmark time except at t_0 . ROS rises pre-IPO and falls after the IPO. It is interesting to note that 91.3% of the firms in the sample have a rising ROS at t_{-3} (significant at the 1% level) and at t_2 this percentage drops down to 15.2% (again statistically significant at the 1% level). Return on total assets (ROA) rises before the IPO and drops after (all figures are statistically significant at the 1% level except at t_{-2} when only the parametric test is significant at 5% level). Moreover, 76.1% of the firms had rising ROA at t_{-3} versus 10.9% at t_2 , both statistically significant at 1%. The difference with ROS is that ROA is also statistically significant at t_0 , whereas ROS is not. ROANoC rises pre-IPO and then declines spectacularly in that pre-IPO, at t_{-3} , 82.6% of firms had a rising ROANoC compared with 13.4% post IPO, at year t_2 , all statistically significant at the 1% level.

Net income rises from t_{-3} up until t_0 and then it reverses direction at t_1 . A high percentage of firms (93.5%) have a rising net income at t_{-3} and by t_2 this percentage drops down to 30.4% (both numbers are statistically significant at the 1% and 5% level respectively).

Cash flow from operations does not seem to have a particular pattern except for the fact that at t_1 it changes direction from positive at t_0 to negative at t_1 (and statistically important at the 10% level).

In panel B, looking at Discretionary Accruals, one can see that these are rising before the IPO. If one looks for example, at DA deflated by Total Assets, at t_{-3} , 80.4% of the firms in the sample had rising discretionary accruals and at t_2 this percentage drops to 26.10% and are both statistically significant at the 1% level. At t_2 , DA reverse direction and they fall (significant at the 1% level). The same is also true for total accruals (TACCR). It seems that at times t_0 and t_1 both discretionary and total accruals are statistically indistinguishable from those at t_{-1} .

The above table shows that earnings management probably took place *pre*-IPO, in the financial accounts included in the prospectus and continued at time t_0 and t_1 because of various reasons notwithstanding the fear from the regulator, the public outcry and also the fact that a number of the owners of these IPO firms had sold shares with guarantees. Of course, one should distinguish the two time periods i.e., *pre*-IPO compared with *post*-IPO. The *pre*-IPO earnings management took place presumably to influence the underwriters in their valuations and the *post*-IPO period to influence the share price due to regulatory, legal and possibly contractual obligations the owners of the IPO firms had with investors. Overall, the second hypothesis (H_{02}) cannot be rejected.

Equation (14) is also tested for ΔROS_{all} , ΔROA_{all} , $\Delta ROANoC_{all}$ as well as total accruals. *t*-test and the *Wilcoxon sign-rank test* (non-parametric statistical test) are employed to test whether the mean and median of these differences for the 46 firms in the sample are significantly different from zero and between them. If earnings management has occurred around the IPO, the profitability measures ΔROS_{all} , ΔROA_{all} , $\Delta ROANoC_{all}$ are expected to be positive and statistically significant. In addition to the above tests, the difference in ROS, ROA, ROANoC and TACCR at the benchmark time is also compared with another two time periods namely, *pre* (t_{-3} , t_{-2}) and *post* (t_0 , t_1 , and t_2) and tested whether the mean and median of these differences for the 46 firms in the sample are significantly different from zero and between them.

Insert Table 30 – Univariate tests for profitability and accruals - pre and post - IPO

As it can be seen from Panel A of table 30 above, the difference of ROS at t_{-1} with the average of all the other years is statistically significant at the 1% level and with the expected sign (positive). Also the difference of ROS *pre-* and *post-*IPO compared with t_{-1} is also statistically significant at the 1% level with a positive sign. Therefore, ROS rises and reaches its peak at t_{-1} . The same can be said for ROA and ROANoC.

Looking at panel B of table 30, one can see that the difference in total accruals (TACCR) and the average of the rest of the years ($t_{-3}, t_{-2}, t_0, t_1, t_2$) deflated by sales, total assets and total assets net of cash at t_{-1} with the rest of the time periods is also statistically important at the 5%, 1% and 1% level respectively, with a positive sign and also the difference *pre-*IPO is statistically significant at the 1% level also with positive sign. The difference *post-*IPO is also statistically significant albeit at the 5% level (except for TACCR deflated by total assets where the difference is not significant⁹⁶). The above results point to the direction that total accruals rise before the IPO and are highest at t_{-1} . All the above may imply that firms were ‘grooming up’ before the IPO and this picture reversed after the IPO.

ii. Multivariate tests

In this section of the empirical results, the relationship that earnings management has on the short- and long-run price performance of CSE IPOs of the sample is investigated.

In tables 31a to 31d the results of the multivariate regressions described above are shown. Each table shows nine regressions. Regressions one(1) to three(3) employ discretionary accruals (DA) as the earnings management independent variable (EM), with sales, total assets and total assets net of cash as deflators respectively.

⁹⁶ When we winsorise Total Accruals at 95th and 5th percentiles the results for the t-test become important at the 5% level.

Regressions four(4) to six(6) similarly employ total accruals (TACCR) as the EM variable and regressions seven(7) to nine(9) employ the accruals components namely creditors (CRED), inventory (INVENT), receivables (REC) and gross depreciation (DEP), again with sales, total assets and totals assets net of cash as deflators respectively. Each regression is also performed with the earnings management variable and cash flow from operations at $t-1$, all winsorised at the 95th and 5th percentile and the results are shown next to the results of the normal regression.

Insert table 31a – Regression results (first day returns)

Insert table 31b – Regression results (CAR12)

Insert table 31c – Regression results (CAR24)

Insert table 31d – Regression results (CAR36)

1. Short-run performance

Table 31a shows the results of the short-run multivariate regression with ADRAW as the dependent variable. As it has already been mentioned, there are nine regressions, namely, three(3) with DA as the EM variable, three(3) with TACCR as the EM variable and three(3) with components of accruals (CRED, INVENT, REC and DEP) as the EM variable. The first three regressions employ DA as the EM independent variable. DA is statistically significant for short-run returns (ADRAW) at the 5% and 10% level with positive sign with sales and total assets net of cash as deflators respectively. It is not statistically significant with total assets as deflator. It is also observed that LNTAL and STDRTNS are statistically important at the 1% level significance across all three regressions. LNTAL and STDRTNS carry the expected sign (negative and positive respectively). LEVER is also found to be statistically significant at the 5% level in regressions one(1) and two(2) and at the 10% level in regression three(3) with the expected sign (positive). UND is also found to be statistically significant at the 10% level in all three regressions and in all three cases carrying the expected sign (negative). OFPR is also statistically

important at the 5% level in regression one(1) and at the 10% level in regressions (2) and (3) and also carries the expected sign (negative).

Similar picture is also shown in regressions four(4) to six(6) with TACCR being statistically significant at the 10% level, and 5% in regression five(5), all with a positive sign. Also Cash Flow from Operations at t_{-1} is significant at the 10% level in regressions (4) and (6) and 5% in regression (5) with a negative sign (expected).

Regressions seven(7) to nine(9) employ the components of accruals as the EM variable. CRED is statistically significant at the 1% level when the deflator is total assets and totals assets net of cash (regressions eight(8) and nine(9)) with positive sign and in regression seven(7) it is important at the 10% level also with a positive sign. Depreciation is also important at the 10% level of significance when sales is the deflator (regression seven(7)), with a negative sign.

In all regressions LNGPR carries the expected sign but it is not statistically important. Also AUD is not statistically important and carries a positive sign (and not a negative sign as expected). R^2 ranges from 86.23% to 89.34% and adjusted R^2 from 82.79% to 85.46%. All in all, R^2 and adjusted R^2 are higher for regressions seven(7) to nine(9). Also, across all regressions, the F-statistic is highly significant at the 1% level.

Overall, one can see that that earnings management does affect the short-run IPO performance. Specifically, the higher the accruals, the higher the underpricing becomes. It is also worth mentioning that deflator choice is important. Sales as a deflator seems to produce better results insofar as the earnings management variable is concerned.

2. Long-run performance

CAR12

Table 31b shows the results of the multivariate regression with CAR12 as the dependent variable. DA is the EM variable in regressions 1 to 3 and it shows no statistical significance. TACCR is also not statistically significant in regressions 4 to

6. In regressions eight(8) and nine(9), CRED is statistically significant at the 1% level and so is INVENT, which is statistically significant at the 1% level in regression eight(8) (deflator is total assets net of cash) both with the expected signs. LNGPR is statistically significant at the 1% across regressions 1 to 3 with the expected sign (positive). STDRTNS is not statistically significant across all regressions albeit it carries the expected sign (negative). OFPR is statistically important across all regressions at the 5% level (except in regressions (8) and (9) where it is important at the 10% level) and carries the expected sign (negative). UND is also statistically significant at the 5% level (regressions (2), (3), (5), (6), and (9)) and at the 10% level (regressions (1), (4), (7) and (8)) respectively. In all cases it does not carry the expected sign (positive).

Across regressions (3), (6), (8) and (9), the F-statistic is statistically significant at the 10% level except in regression 8 that is statistically significant at the 5% level. R^2 and adjusted R^2 range from 30.28% to 44.14% and from 12.85% to 23.83% respectively. R^2 and adjusted R^2 are higher in regressions seven(7) to nine(9) i.e., when the components of accruals are employed.

CAR24

In table 31c the results of the multivariate regression with CAR24 and the independent variables are shown. Neither DA nor TACCR are statistically significant with any deflator except TACRR being statistically important at the 10% level in regression four(4) with sales as deflator but not with the expected sign. The picture changes when the components of accruals are introduced as the EM variable. Specifically, CRED is statistically significant at the 1% level with the expected sign (negative) across regressions seven(7) to nine(9). Also, DEP is statistically important at the 1% and 5% level in regressions eight(8) and nine(9) respectively with the expected sign (positive). Also INVENT is important in regressions seven(7) and eight(8) (winsorised) at the 5% and 1% level with the expected sign (positive) and REC is also important in regressions seven(7) and eight(8) at 10% and 1% level respectively with the expected sign. LNGPR is statistically important at the 1% level of significance across all regressions with the expected sign. OFPR and STDRTNS are also significant at the 10% level, again with the expected signs but not across all regressions for OFPR (four(4) regressions out of nine(9)).

The F-statistic is statistically significant only in regressions seven(7), eight(8) and nine(9) at the 10%, 5% and 10% level respectively (when winsorised earnings management variables are employed these values rise to 5%, 1% and 5% respectively). Values for R^2 and adjusted R^2 range from 24.70% to 43.43% and 5.87% to 22.85% respectively, with the best values found again in regressions seven(7) to nine(9) where the components of accruals are employed as the independent earnings management variable.

CAR36

The results of the multivariate regression of the dependent variable CAR36 with the independent variables are shown in table 31d. These show that DA and TACCR are statistically significant in regression two(2) (winsorised) and regression three(3) with the expected sign (negative). Also, TACCR is statistically important in regression five(5) and regression six(6) (winsorised), also with the expected sign (negative). When the accrual components are employed as EM variable, then CRED demonstrates statistical significance at 1% level across all three regressions (seven(7) to nine(9)) with the expected sign (negative)). DEP is also statistically significant at the 10% level when total assets and total assets net of cash are employed as deflators (regressions eight(8) and nine(9)) again with the expected sign (positive). Also INVENT is statistically important in regressions seven(7) and eight(8) winsorised and REC in regression seven(7) and both carry the expected sign (positive). LNGPR and STDRTNS are statistically significant across all regressions, both with the expected sign.

The F-statistic of the model is statistically significant at the 5% level in all regressions except one(1) and four(4), where it is significant at the 10% level. It is worth mentioning that the winsorised models in regressions three(3), six(6) and eight(8) are statistically significant at the 1% level. The R^2 and adjusted R^2 values range from 31.47% to 49.24% and 14.33% and 30.79% respectively, with the highest being at regressions seven(7) to nine(9) (highest being at regression eight(8)).

The results of the multivariate regressions above show that the earnings management variables DA and TACCR are statistically important in the short-run and in the long-run for CAR36. The higher the discretionary and total accruals the higher is the first-

day returns of the IPO. The statistical significance of these variables drops when one looks at long-term returns (mainly CAR12 and CAR24). The components of accruals become better predictors of long-run stock returns. Especially CRED and DEP are consistently important especially when the deflators are total assets and total assets net of cash. It is obvious that the results are deflator sensitive, with Sales being a better deflator for the short run and total assets and total assets net of cash producing better results for the long-run. The results of the regressions for the long run seem to validate the fourth Hypothesis (H_{04}).

Looking at figure 13 below, based on the results of the multivariate regressions, the hypothesis that underwriters adjust IPO valuations faster than investors do, cannot be rejected i.e., underpricing rises with rising accruals.

Figure 13 – Underpricing and rate of accruals adjustment management matrix

		<i>Not adjusting valuations</i>	<i>Adjusting valuations</i>
Actions of underwriters	<i>Not adjusting valuations</i>	Relationship between underpricing and rate of accruals mgt is indeterminate	Underpricing is decreasing with increasing Accruals mgt
	<i>Adjusting valuations</i>	Underpricing is rising with rising accruals	Relationship between underpricing and rate of accruals mgt is indeterminate
		Actions of investors	

VI. Conclusions

In this chapter of the thesis, it is postulated that that CSE IPO firms, over the sample period 1997-2002, managed their earnings by making income-increasing accruals before going public. These earnings management actions were more pronounced before going public (at t_{-1} which is the last year of audited accounts in the prospectus) and reversed after t_1 (which is the first full year of an IPO firm as a publicly listed company) i.e., at t_2 .

One cannot reject the two hypotheses and earnings management cannot be ruled out for CSE IPO firms. Specifically, using both univariate and multivariate tests it is observed that Discretionary Accruals (DA) with t_{-1} as the benchmark time rise within the prospectus time frame and *pre-IPO* (with t_{-3} , and t_{-2} as test times) and reverse at t_2 . It is also observed that DA do not differ statistically with DA at t_0 and t_1 meaning that they are probably at the same level at t_0 and t_1 as they are t_{-1} . Total accruals (TACCR) are also increasing *pre-IPO* and they are statistically significant and reverse at t_2 . Moreover, change in profitability measures, namely return on sales (ROS), return on assets (ROA) and return on assets net of cash (ROANoC), demonstrate significant statistical difference when t_{-1} is compared with the average of the rest of the time frames (t_{-3} , t_{-2} , t_0 , t_1 , and t_2) and also when compared *pre-IPO* and *post-IPO*.

Finally, the IPOs price performance (short and long) is regressed against a set of independent variables and amongst them a variable for earnings management which takes the form of discretionary accruals between t_{-2} and t_{-1} , and total accruals over the same period. The components of accruals are also employed, namely, Creditors, Inventory, Receivables and Depreciation in the place of the earnings management variable over the same time period.

Discretionary accruals are found to have a positive and statistically significant relationship with short-run returns, meaning that as accruals rise, underpricing increases. This can be attributed to the faster adjustment by underwriters of valuations to take into account income increasing accruals, and at the same time the inability of investors to revise with the same degree and speed their valuations due to

the high levels of exuberance that existed in the market as these were manifested by the high level of secondary as well as primary returns. Moreover, components of accruals are observed to explain well the long-run stock price performance. The results are sensitive to the deflator employed, with Sales explaining better short-run results and total assets and total assets net of cash being better deflators for long-run results.

As it can be concluded from the results of the tests, one cannot reject the hypothesis that earnings management did actually take place in CSE IPOs over the sample period. Income increasing accruals drove earnings higher before the IPO and reversed after the IPO at t_2 . Earnings management in CSE IPOs seems to be part of wider institutional and procedural inefficiencies that existed in the IPO process amplifying the level of first day returns whilst at the same time, enhancing long term underperformance.

**Chapter 3 - A survey on managerial attitudes regarding Initial
Public Offerings on the Cyprus Stock Exchange**

Abstract

Great effort, both theoretical and empirical, has been made to understand managerial decision-making in the initial public offering (IPO) process. Most empirical IPO research relies on publicly available stock return data. However, there is a need to extend the literature by examining how well managers' motivations for conducting IPOs and understanding of the IPO process correlate with existing academic theories. With this as motivation, a survey was conducted to determine managers' insights into the IPO process in a novice stock market such as the Cyprus Stock Exchange (CSE). Six specific aspects of the IPO process were studied namely, (1) motives for going public; (2) the timing of IPOs; (3) criteria for choosing an underwriter; (4) IPO underpricing; (5) IPO signalling; and (6) reasons to stay private. Extra insight was also attempted to be added by testing managerial behaviour on certain IPO process issues. In some areas, harmony is observed between managers' beliefs and academic theory. But in other key areas, managers' perceptions seem to diverge from traditional academic theory. Cypriot managers' overall views are found to coincide at large with views of managers in a country (US) with arguably the most advanced capital market in the world.

I. Introduction

Going public is not an easy process, nor is it without costs. Many companies have begun the IPO process only to withdraw the offering, often confused and frustrated by the experience. To improve decision-making – and to mitigate many of the uncertainties—managers need a clear picture of the core issues involved in the IPO process. Great effort, both theoretical and empirical, has been made to understand managerial decision-making in the initial public offering (IPO) process. Most empirical IPO research relies on publicly available stock return data. However, there is a need to extend the literature by examining how well managers' motivations for conducting IPOs and understanding of the IPO process correlate with existing academic theories.

With this as motivation, a survey was conducted to determine managers' insights into the IPO process in a novice stock market such as the Cyprus Stock Exchange (CSE). Six specific aspects of the IPO process were studied namely, (1) motives for going public; (2) the timing of IPOs; (3) criteria for choosing an underwriter; (4) IPO underpricing; (5) IPO signalling; and (6) reasons to stay private. Extra insight was also attempted to be added by testing managerial behaviour on certain IPO process issues.

By surveying managers to obtain a real-world perspective of the IPO process, one can also compare their beliefs and experiences to both academic theory and the findings of empirical research. One can also compare the responses of managers in an emerging market with those of managers in a highly developed market. Doing so allows us to identify the gaps between theory and practice, and to begin to bridge those gaps through better communication and more targeted research.

In a number of areas, harmony is observed between managers' beliefs and academic theory. But in several other key areas, managers' perceptions seem to diverge from traditional academic theory. Cypriot managers' overall views are found to coincide at large with views of managers in a country (US) with arguably the most advanced capital market in the world.

The main findings from the survey are summarized below:

First, respondents in the survey carried out, provide evidence that the *intent of the going public decision* is mostly to enhance the reputation of their company (Maksimovic and Pichler (2001)) as well as to broaden the base ownership (Chemmanur and Fulghieri (1999)) and establish a market price/value for their firm (Zingales (1995), Mello and Parsons (2000)). There is also moderate support for the premise that firms aim at creating public shares for use in future acquisitions (Brau, Francis and Kohers, (2003), Zingales, (1995)). Least important motivations are funding reasons, especially private equity, and insiders' cashing out including venture capitalists.

Brau and Fawcett (2006), in a survey of 336 CFOs in the U.S. find that respondents in their survey identify the creation of public shares for acquisitions as the most important motivation for going public together with the establishment of market price or value of the firm. Enhancing corporate reputation is moderately important. Least important motivations were found to be minimisation of the cost of capital, pecking order of financing and creating an analyst following.

Second, responses suggest that as far as influences on *IPO timing* are concerned, managers rank overall stock market conditions as being the most important factor (Lucas and McDonald (1990)), followed by the need for external equity capital for growth which is consistent with findings of Choe, Masulis and Nanda (1993) as well as Lowry (2002), and current industry conditions (Pagano et al (1998)). Managers seem to pursue 'windows of opportunity' (Loughran and Ritter, (1995)), but they define these windows in terms of overall stock market and industry conditions and not by the conditions in the IPO market.

In Brau and Fawcett (2006), respondents take into account overall market and current industry stock returns and place less emphasis on the strength of the IPO market when considering the timing of their issue. They also show strong support for the need for equity capital to support growth.

A small body of academic literature on the relation between *underwriter reputation* and issuer choice focuses on observable factors such as initial and long-term underpricing in the IPO market, tombstone rankings, and underwriter market share. The responses in the survey suggest that the most important criterion that Cypriot managers cite for selecting their lead underwriter is the underwriter's overall reputation and status (as per Krigman, Shaw and Womack, 2001)), citing the underwriter's industry expertise, connections and clientele base (both retail and institutional). Managers in the survey seem not to place emphasis on whether the underwriter is a bank subsidiary (as per Kanatas and Qi, (1998), Drucker and Puri, (2005)) nor do they deem as important the ability of the underwriter to provide liquidity. Spinning is also quite low on their list.

In Brau and Fawcett (2006), respondents select underwriters based on overall reputation, quality of the research department and industry expertise and connections. Spinning is also ranked low on their list whilst market making, trading desk and liquidity provision services rank as moderately important.

Early researchers on IPO literature, notably Logue (1973) and Ibbotson (1975), documented that when companies go public, the shares they sell tend to be *underpriced*, in that the share price jumps substantially on the first day of trading. In well-developed capital markets and in the absence of restrictions on how much prices are allowed to fluctuate by from day to day, the full extent of underpricing is evident fairly quickly, certainly by the end of the first day of trading, and so most academic studies use the first-day closing price when computing initial underpricing returns.

The majority of the respondents in the survey seem to be informed on underpricing expectations whilst a significant minority seem not to be able to distinguish between underpricing and overpricing in contrast to the great majority of respondents in Brau and Fawcett (2006) survey whereby, they seem to be well versed on the expected level of underpricing. It is observed that Cypriot managers feel that underpricing exists primarily to incur the favour of institutional investors. The desire to widen the ownership base was also found to be a moderately important reason for underpricing the issue as well as increasing the post-issue trading volume. The issue of compensating investors for taking the risk of the IPO was found to be moderately

important and mitigating future litigation by investors is seen by respondents as largely unimportant.

In Brau and Fawcett (2006), respondents view the compensation of investors for taking the risk of the IPO as the single most important reason for underpricing. They also agree with their Cypriot counterparts that underwriters underprice to incur the favour of institutional investors and to widen the ownership base. Respondents in Brau and Fawcett (2006) also view mitigating future litigation as of moderately low significance.

Due to asymmetric information between IPO insiders and potential investors, *Signaling theory* continues to be an important component of IPO research. The respondents in the survey cited as the most important signal regarding the value of their firm going public the strong historical earnings (Teoh, Welch and Wong (1998)). The commitment by insiders to a lock-up period (Courteau (1995), and Brau, Lambson and MacQueen (2005)), the usage of a top investment bank as underwriter and manager of the IPO (Booth and Smith (1996), Carter and Manaster (1990), Carter, Dark and Singh (1998)), and the use of a big-five accounting firm (Titman and Trueman (1986), Beatty (1989) and Michaely and Shaw (1995)) were also cited as strong signals. A large first-day share jump (Welch, (1989), Allen and Faulhaber, (1989) and Chemannur (1993)) and the issue of free warrants (Chemmanur and Fulghieri (1997)) were cited as moderately positive signals. The selling of insider shares in the IPO (Leland and Pyle (1977)) and the selling of a large portion of the firm in the IPO are cited as negative signals.

Brau and Fawcett (2006) find that CFOs in their survey (especially of large firms) view strong historical earnings as the most positive signal in the IPO process. Using a top investment bank is the second-strongest positive signal and committing to a long lock-up is the third-strongest positive signal followed by the use of a big-four accounting firm. Selling a large portion of the firm, issuing units (shares with warrants), and selling insider shares are all viewed as negative signals.

The analysis of *IPO process design* reveals that respondents view the threat of accusations pertaining to window dressing (accruals management in the IPO

prospectus financial statements) in the prospectus as a moderately important IPO issue. Respondents in Brau and Fawcett (2006) share the same opinion. The most important IPO process design issues in the survey according to respondents is the need to carry out financial and legal due diligence.

In Brau and Fawcett (2006), respondents view the use of firm-commitment underwriting contract as the most important IPO design issue. The lock-up period is also important. Concerning window dressing, respondents are not preoccupied with potential negative backlash. As far as unit offerings are concerned, these are not considered by respondents as important.

Regarding issues causing the concern in the *decision to conduct an IPO*, the respondents in the survey view the desire to maintain decision-making control as the most important factor followed by unfavourable market/industry conditions. The fact that they want to avoid ownership dilution, somewhat contradicts another response, whereby the view of widening the ownership base is also cited as an important reason for going public. They also view market/industry conditions, the costs/fees of the IPO, and disclosing information to competitors as moderately important.

In Brau and Fawcett (2006), respondents view that maintaining decision-making control as the primary reason for remaining private. They are also concerned about avoiding ownership dilution as well as unfavourable market and industry conditions. They also view disclosure of information to competitors as moderately important.

Questioning the respondents in the survey about other parameters which are known empirically to be important within IPO academic conjecture, it is observed that the majority of the respondents replied that smaller companies are less likely to go public and that younger companies are less likely to go public as well as that riskier companies are more likely to go public. Highly leveraged companies are more likely to go public according to the majority of the respondents. Almost all of the respondents' replies are fully aligned with the relevant academic literature.

Table 32 below shows a comparison between the responses of the survey and the corresponding responses of Brau and Fawcett (2006) survey. Clearly, views seem to coincide, though the prioritisation in certain cases differs.

Insert table 32 – Summary comparison of results of the survey with Brau et al (2006)

The remainder of the chapter proceeds as follows. Section II gives an overview of the research methodology and data. Sections III-VIII, in turn, review the IPO literature used to generate the survey questions and present detailed findings from the data analysis. Section IX summarises the key conclusions.

II. Research Methodology

A. Survey methodology and data sources

One of the main challenges in conducting a survey of IPO firms is to find an effective distribution channel to the relevant individuals within the firms, and to entice them to complete the questionnaire. Not only are the potential respondents extremely busy individuals, but they are also probably overwhelmed with questionnaires from various quarters. The author of this thesis was fortunate enough to have the support of the Cyprus Stock Exchange in this effort.

A letter was formally sent on the 1st of February 2007 by Durham Business School to the Director General (CEO) of the C.S.E.. The letter described the survey, the reason for the survey and requested assistance in distributing the questionnaire to the listed firms. In parallel mode, the procedure to be followed was agreed with the C.S.E. authorities.

A standardised questionnaire was employed for which each respondent is exposed to the same questions and the same system of coding responses. The aim is to try to ensure that differences in responses to questions can be interpreted as reflecting differences amongst respondents, rather than differences in the processes that produced the answers.

The Cyprus Stock Exchange distributed the questionnaire to all listed companies (140 in total⁹⁷) encouraging them to support the research⁹⁸ by replying to the questionnaire. The targeted population of the survey was companies that were listed in the C.S.E. after January 1997 till December 2004. Only four(4) companies that were outside this time frame replied and their responses were ignored.

⁹⁷ It is worth noting that the CSE did not send the questionnaire to companies that were already delisted.

⁹⁸ For instance, the email sent by the Director General of the C.S.E. to accompany the survey included the following encouragement: "We would greatly appreciate if you could complete the questionnaire and send it by the latest the 3rd of May 2007..." The email also stressed that the research was for the Doctoral Programme of Durham University, "...one of the oldest in the United Kingdom".

The original e-mail was sent on the 12th of April 2007, and was followed by two e-mail reminders from the C.S.E., the first sent on the 7th of May 2007 and the last one on the 12th of July 2007. Subsequently, telephone calls were also made by the author to all firms. To increase the response rate, the author promised to provide respondents with an early copy of the survey results. The final responses were received over the period from April to September 2007. Overall, 34 responses were received, out of which, 30 were usable surveys for a response rate of 21% from a total of 140 companies. However, if the response ratio is calculated over the number of companies contacting an IPO in the C.S.E. over the period 1997-2004 (excluding closed-investment companies), then the response ratio rises to 31.3%.

Compared to previously published research in financial economics, the response rate of the survey compares favourably with other surveys. Graham and Harvey (2001) survey 4,587 CFOs of which 8.5% respond. Trahan and Gitman (1995) survey 700 CFOs and report a 12% response rate. In a survey of 180 IPO firms that switch underwriters between the IPO and SEO, Krigman, Shaw and Womack (2001) report a 34% response rate. Brau et al (2006) survey 336 CFOs and report a response rate of 18.8%.

The survey, which is reproduced in Appendix A, included a preamble assuring respondents that their answers would be treated in the strictest confidence. The survey consisted of 8 questions measured on a five-point Likert scale, 6 questions using a yes/no/don't know response, one open-ended question and two questions requiring a specific numerical reply.

B. Survey limitations

While the survey method provides insight directly from decision makers, as Aggarwal (1980) argues, the interpretation of survey data presents some limitations. Managers of firms were surveyed, so each response was the opinion of one individual and might not fully reflect the firm's position. There is also potential concern about a non-response bias in spite of the relatively high response rate. Finally, and perhaps most importantly, the time period of the survey might not be representative of other time periods. It has been documented that financial

perspectives can change depending on the market conditions. For example, in Welch (2000) and his subsequent work, Welch finds that financial economists' perceptions of the expected equity premium have changed based on market conditions. Therefore, to the extent that managers' sentiment is market-condition dependent, the results of the survey may not be applicable to markets that differ from the sample period.

Insert table 33 – Sample representativeness

Insert table 34 – Sample Statistics

III. The Going Public Decision – Motivations and timing

In their review of the IPO literature, Ritter and Welch (2002) discuss three broad reasons why firms go public. First, firms need to raise additional external equity for capital structure reasons and to fuel growth. Second, principals desire an increase in liquidity. Third, but not as important as the first two, firms could have non-financial reasons, such as prestige, market recognition, analyst coverage, and media attention.

Ritter and Welch (2002) further divide existing theories on the aspect of why firms go public into two major groups namely, *Life Cycle* and *Market Timing* theories. Within each area there exist several articles that take different approaches. Brau, Ryan and DeGraw (2006) outline these in a table which is reproduced below; Panel A lists life cycle theories and Panel B lists market-timing theories. The early articles (1963 to 1984) in Panel A do not focus strictly on IPOs, whereas the more recent ones (1995-2003) focus on owner liquidity and reputation of IPO firms.

Insert table 35 - Why do firms go public? Some dominant theories

A. Life Cycle theories

Life Cycle theories argue that there exists an optimal capital structure and firms act in predictable manners to obtain such optimality. Firms prefer the cheapest source of financing (including opportunity costs) and only acquire expensive financing when the cheapest source is exhausted. Following this line of reasoning, managers could conduct an IPO when the firm has reached the point in the life-cycle where external equity can help obtain an optimal capital structure (e.g., Scott (1976) and Modigliani and Miller (1963)) who do not strictly focus on IPOs, argue that firms conduct a public offering when external equity will minimise their cost of capital (thereby maximising the value of the company)). Based on asymmetric information and possible stock price misvaluation, Myers and Majluf (1984) and Myers (1984) further argue for a pecking order of financing i.e., internal cash flow, debt financing and then external equity.

The first formal theory of the going public decision appeared in a paper by Luigi Zingales (1995). He observed that it is much easier for a potential acquirer to spot a potential takeover target when its shares are publicly listed. Moreover, entrepreneurs realise that acquirers can pressure targets on pricing concessions more than they can pressure outside investors. By going public, entrepreneurs thus help facilitate the acquisition of their company for a higher value than what they would get from an outright sale. In contrast, Black and Gilson (1998) point out that, entrepreneurs often regain control from the venture capitalists in venture-capital-backed companies at the IPO.

Thus, many IPOs are not so much exits for the entrepreneur as they are for the venture capitalists. Brau, Francis and Kohers (2003) using U.S. data examine the choice between an IPO and selling the firm to a publicly traded buyer, conditional on wishing to sell the company, having no data on companies that stay private. They find that private firms are more likely to choose the IPO route over a takeover, the larger their transaction size and the lower the market-to-book ratio in the industry.

Chemmanur and Fulghieri (1999) develop the more conventional wisdom that IPOs allow more dispersion of ownership, with its advantages and disadvantages. Pre-IPO ‘angel’ investors or venture capitalists hold undiversified portfolios and, therefore, are not willing to pay as high a price as diversified public-market investors. There are fixed costs associated with going public, however, and proprietary information cannot costlessly revealed. Thus, early in its life cycle, a firm will be private, but if it grows sufficiently large, it becomes optimal to go public.

Public trading per se has costs and benefits. Maksimovic and Pichler (2001) point out that a high public price can attract product market competition. Public trading, however, can, in itself, add value to the firm, as it may inspire more faith in the firm from other investors, customers, creditors, and suppliers. Being the first in an industry to go public sometimes confers a first-mover advantage.

Bradley, Jordan and Ritter (2003) suggest that IPO firms can increase their reputation by creating an analyst following.

In question 1 of the survey (*How important were the following motivations for conducting the IPO?*), the four most important motivations cited by the respondents for conducting an IPO are (a) to enhance the reputation of their company (Maksimovic and Pichler, (2001)), (b) to broaden the base ownership of their firm (Chemmanur and Fulghieri (1999)), (c) to establish a market price/value for their firm (Zingales, (1995), Mello and Parsons, (2000)) and (d) to create public shares for use in future acquisitions (Brau, Francis and Kohers (2003), Zingales (1995)). The least important motivations for conducting an IPO according to the respondents were: (a) to allow venture capitalists to cash-out (Black and Gilson (1998)); (b) their company has run out of private equity (Miller (1978)); and (c) to allow shareholders to sell part of their shares (Dhillon, Raman and Ramirez, (1999), Brau, Li and Shi (2005), Ang and Brau (2003)). Results are shown in table 36.

The combination of the most important cited motives by the respondents in the survey points to the grooming of their firms to acquire other companies (or be acquired) by raising their reputation (visibility), and placing their shares in an environment whereby, their value is established. The newly established Cyprus Stock Exchange provided a ‘prestigious’ platform whereby listed companies, which eyed Europe as their trading platform, could capitalise as a marketing weapon.

During the period 1996-2004, the private equity industry in Cyprus was at its infancy and very few companies had private equity investors in their shareholdings. Moreover, the level of disintermediation in the Cypriot capital markets was very small for non-banking corporates. Commercial banks filled in the shoes of private equity investors and bond investors alike. Interest rates, both lending and deposit, had a legal cap (at 9% and 7% respectively), therefore, risk was not priced efficiently. Moreover, most Cypriot firms, being family firms, are mostly undercapitalised (equity-wise) and funds are obtained from banks at large, by pledging personal securities of owners. Therefore, it comes as no surprise that respondents were not worried about minimising their firms’ cost of capital nor did they pay particular attention to the pricing of debt.

Brau and Fawcett (2006) survey 336 US-based Chief Financial Officers (CFOs) to compare practice to theory in the several areas of the IPO literature, amongst them motivations for going public and timing of the IPO. They find that CFOs identify the creation of public shares for acquisitions as the most important motivation for going public. They find that traditional textbooks explanations such as lowering the cost of capital (Scott (1976) and Modigliani and Miller (1958)) and the pecking order of financing i.e., internal equity, debt financing, and then external equity (Myers and Majluf (1984) and Myers (1984)) are not amongst the most important reasons for conducting an IPO. They also find that as far as high-tech firms are concerned, these view an IPO more as a strategic reputation-enhancing move than as a financing decision.

Insert table 36 – IPO motivations

B. Market-Timing theories

Market-timing suggests that firms decide to go public based at least partially on market conditions. Lucas and McDonald (1990) develop an asymmetric information model where firms postpone their equity issue if they know they are currently undervalued. If a bear market places too low a value on the firm, given the knowledge of entrepreneurs, then they will delay their IPOs until a bull market offers more favourable pricing. In Choe, Masulis and Nanda (1993), firms avoid issuing in periods where few good-quality firms issue. The authors find that firms tend to increase equity offerings more frequently in expansionary periods. Lowry and Schwert (2002) argue that recent first-day share performance of firms going public leads other firms to decide to go public. Baker and Wurgler (2002) argue that market timing has large and persistent results on capital structure. They find that fluctuations in market value have very long run impacts on capital structure. According to the authors, capital structure is the cumulative outcome of attempts to time the equity market.

Other theories have argued that markets provide valuable information to entrepreneurs who respond to increased growth opportunities signalled by higher prices (Subrahmanyam and Titman (1999), Schultz (2003)). Using long-run returns,

Ritter (1991) and Loughran and Ritter (1995) posit that firms time their IPOs to take advantage of windows of opportunity that allow them to get the most attractive offering prices.

Ritter and Welch (2002) suggest that in addition to the above theories for IPO volume fluctuations, a plausible semi-rational theory without asymmetric information can also explain cycles in issuing activity. Entrepreneurs' sense of enterprise value derives more from their internal perspective, their day-to-day involvement with the underlying business fundamentals, and less from the public stock market. Sudden changes in the value of publicly traded firms are not as quickly absorbed into the private sense of value held by entrepreneurs. Thus, entrepreneurs adjust their valuation with a lag. As a result, even if the market is driven by irrational public sentiment or the entrepreneur's price is driven by irrational private sentiment, entrepreneurs are more inclined to sell shares after valuations in the public market have increased.

In question 2 (*To what extent did the following influence the timing of your possible IPO?*), the respondents cited as most important influences on their IPO timing the (a) overall stock market conditions (Lucas and McDonald (1990), Baker and Wurgler (2002), Alt, (2006), and Harris and Raviv (2013)), (b) the need for capital for growth (Choe, Masulis, and Nanda, (1993)), (c) industry conditions (Pagano et al (1998)) and (d) the first-day share price performance of recent IPOs (Lowry and Schwert, 2002)). Results are shown in table 37.

The respondents' replies seem to support the window of opportunity hypothesis (Loughran and Ritter (1995)). Moreover, the period 1996-2004 is the European Union pre-accession era, and Cypriot firms were gearing up to face the stiff competition that would be created from the opening up of the Cypriot economy, thus the need for capital for growth. The fact that almost all the listings that were undertaken over the period 1996-2004⁹⁹ dealt with fresh capital rather than the sale of shares of existing shareholders demonstrates this argument. The incumbent players in each industrial sector were careful not to allow any firm to take the lead by gathering relatively large sums of money from an IPO, thus threatening their leads.

⁹⁹ The large majority of the IPOs in the Cyprus Stock Exchange took place over the period 1999-2001

It is also worth mentioning that all firms that were eventually listed over the period 2000 to 2004 applied for a listing the first six months of 2000. Therefore, a ‘window of opportunity’ did actually exist.

Brau and Fawcett (2006) also argue that CFOs take into account market and industry stock returns and place less emphasis on the strength of the IPO market when considering the timing of their issue. Overall, stock market conditions were identified by CFOs as the single most important determinant of timing. They also find that venture capital backed firms and firms with smaller insider ownership decreases in the IPO, tend to view market timing issues as more important than their counterparts.

Insert table 37 – IPO timing

IV. Underwriter selection in IPOs

A small body of academic literature on the relation between underwriter reputation and issuer choice focuses on observable factors such as initial and long-term underpricing in the IPO market, tombstone rankings, and underwriter market share.

The economic benefits to a firm associating itself with high quality underwriters appear to be well established. Michaely and Shaw (1994) show that higher capitalized (and, by inference, higher quality) underwriters underprice less in the period 1984-1988. Beatty and Ritter (1986) show that short-run mispricing by underwriters is associated with future market share losses in underwriting fees. Dunbar (2000) finds that the IPO underwriters, who underprice the most, providing the highest first-day returns for investors, lose IPO market share over time. If the amount of underpricing is taken as a proxy for lower quality, then the perception of quality appears to be related to underwriters' aggregate market share gains and losses in the 1970s and 1980s (Krigman, Shaw and Womack, (2001)).

The implication is that firms engaging less frequently in underpricing, and being of presumably higher quality, will extract a higher proportion of the proceeds for the company and early investors. Nanda, Yin and Yun, (1995) and Carter, Dark and Sing (1998) also report that the excess performance of IPOs underwritten by higher quality investment banks is more positive in the long run.

Ljungqvist et al. (2003) infer that in the 1990's, the relationship between underwriter prestige and underpricing appears to have reversed. Beatty and Welch (1996) demonstrate that higher quality underwriters have underpriced more in the 1990s. Kumar, McGee and Womack, (1998) confirm this observation, and find that the most prestigious underwriters with the highest market shares typically are associated with the hottest, most underpriced IPOs.

Prior research has identified high quality underwriting firms through indirect inference. Carter and Manaster (1990) and Carter et al. (1998) provide a metric of underwriter 'pecking order,' ranking firms by where they appear on the tombstones of completed offerings. Megginson and Weiss (1991) link reputation of underwriters

to the market share of offerings completed. They implicitly argue that the highest-quality underwriters will gain the largest offerings and the highest proportion of fees.

One problem with using market share or a proxy like tombstone rankings to measure reputation or quality is that the specific tasks for which the underwriter is rewarded are undefined or, at best, ambiguous.

In question 3 (*How important were the following criteria in selecting your lead IPO underwriter*), the respondents were asked to rate a list of criteria that they employed to select their lead IPO underwriter. The most important criterion cited for selecting their lead IPO underwriter was the underwriter's overall reputation and status. Also the underwriter's industry expertise and connections were highly rated as well as the institutional and retail investor client base of the underwriter (see table 38 for the results).

The underwriter's reputation for spinning¹⁰⁰ and whether the underwriter was a subsidiary of their company's main commercial bank were cited as the two least important criteria. The latter point is interesting since the three larger local banks' investment banking subsidiaries had collectively over 60% market share of the IPOs over the period 1997-2004. Having said that, independent (non-bank subsidiaries) underwriters had 40% market share which considering the fact that the three main local banks had a market share of over 75% of the total corporate loan market, points to the fact that firms possibly did not have the commercial bank criterion as a main decision factor in selecting their lead IPO underwriter. Another explanation would be the fact that managers/owners of IPO firms did not want their banks to have access to the IPO proceeds they gathered so as not to pressure them to settle loans. The absence of market makers from the legal and regulatory setting is also reflected in the respondents' reply on the same criterion.

Very few underwriters during the 1997-2004 period in Cyprus did have proper research departments that employed experienced analysts to follow up companies they took public and even so, there was no regulatory framework regarding research

¹⁰⁰ *The practice of investment banks setting aside portions of IPO shares of companies they take public for top executives of other companies in exchange for reciprocating business to the investment banks.*

analysts' professional conduct. It was only after 2004, that a small number of underwriters began forming research departments with truly qualified personnel.

Krigman, Shaw, and Womack (2001), using a sample of 572 firms that conducted an IPO between January 1993 and December 1995 in the NYSE, survey 62 CFOs and ask them to rank various criteria used to select an IPO underwriter. The respondents ranked the underwriter's overall reputation and status as the most important reason for choosing the IPO lead underwriter followed by the quality and reputation of the research department and the underwriter's industry/sectoral experience and connections. The respondents also cited as the least important reasons, the retail client base of the underwriter and the non-equity related services (e.g., advice on M&A, debt).

In this survey, the retail client base of the underwriter was deemed by respondents to be an important criterion in choosing the underwriter, the reason being that retail investors in Cyprus were very active in the primary market, especially during the boom years (1999-2001) and commanded significant amounts of money. Antoniou et al (2004) in their second survey of assets and debts of Cypriot households find that the participation rate of the population in direct¹⁰¹ stock owning in 2002 reached 51.4 per cent compared to 25.3 per cent in 1999. Moreover, they find that the largest increase in direct stock holding participation was reported among those with less than CY£5,000 reported annual income (from 8.80 per cent in 1999 to 30.70 per cent in 2002). They also find that stockholding participation increased for all age groups, even for households above 70 years (from 10.4 per cent in 1999 to 20.3 per cent in 2002). They also find that one third of the Cypriot households in 2002 owned stocks directly in only one company¹⁰² (42.4 per cent in 1999).

Brau and Fawcett (2005) argue that CFO responses in their survey show that the principal intermediary role (i.e., the ability to provide expertise needed to carry out a successful IPO) is the core issue considered in selecting an underwriter. The three

¹⁰¹ *The first law for the creation of mutual funds in Cyprus was enacted in April 2004. Therefore, investors who wanted to get an exposure in Cypriot equities had no other choice but to directly own Cypriot shares.*

¹⁰² *Demetra Investment Public Limited was a closed-end investment company formed by the co-operative movement in Cyprus to protect the leakage in deposits that flowed primarily to the stock market and secondarily to the commercial banks as a direct result of retail participation of investors in the IPO craze of 1999-2001.*

criteria rated as the most important by CFOs in the authors' survey in selecting an underwriter are: (i) overall reputation, (ii) quality of research, and (iii) industry expertise, findings which are in line with Krigman, Shaw and Womack, (2001). The authors also point out that CFOs who select high prestige underwriters attach a significantly higher level of importance to these three selection criteria than CFOs who opt for low prestige underwriters. The latter are more concerned about valuation promises and fee structure.

In the survey, respondents do not seem to be concerned with valuation promises and fee structure.

Insert table 38 – Criteria for selecting lead underwriter

V. Underpricing in IPOs

Numerous explanations for underpricing have been advanced. For clarity, eight (8) subgroups were formed based on their underlying premise.

The three (3) key parties to an IPO transaction are the issuing firm, the financial services firm underwriting and marketing the deal, and investors. Asymmetric information models assume that one of these three parties knows more than the other two. First, asymmetric information between the underwriter and the issuer leads to underpricing. Baron and Holmstrom (1980) and Baron (1982) argue that underwriters exploit superior market knowledge to underprice issues, minimize marketing effort, and ingratiate themselves with buy-side clients.

Second, underpricing exists due to asymmetric information between issuers and potential investors. Beatty and Ritter (1986) argue that investor uncertainty about the IPO firm biases offering prices lower than the unknown future market price. Benveniste and Spindt (1989), Benveniste and Wilhelm (1990), and Spatt and Srivastava (1991) argue that underpricing rewards sophisticated investors for divulging accurate valuation information during the book-building process.

Third, underpricing occurs because of asymmetric information between informed and uninformed investors. Rock's (1986) model, also known as the winner's curse, is probably the best known asymmetric information model, and is an application of Akerlof's (1970) lemons problem in the used car market: uninformed buyers will withdraw from a market if their informational disadvantage results in their being presented with an adverse selection from the quality distribution of goods. Therefore, uninformed investors must be compensated for participating in the IPO.

Fourth, underpricing serves as a protection against possible future litigation from investors. Ibbotson (1975) and Tinic (1988) posit that firms intentionally underprice their shares as a form of insurance against future liability. Hughes and Thakor (1992) extend Tinic's analysis in a game-theoretic setting and specify the conditions required for equilibrium underpricing. Hensler (1995) formalises Tinic's model using a utility-maximisation single-period model. Both models similarly predict a

positive relation between litigation risk and underpricing. Lin et al. (2013) test the insurance effect of the lawsuit avoidance hypothesis using a sample of 13,759 IPOs across 40 countries from 1991 to 2011. They find evidence in support of the insurance effect of the lawsuit avoidance hypothesis in an international setting. They also find a significant negative relationship between underpricing and the quality of law enforcement. The authors argue that their results suggest that better enforcement of the securities laws reduces the level of underpricing.

Fifth, underpricing may serve a marketing function. Welch (1992) models the idea that underpricing can cause a domino or cascade effect among investors that raises demand for the issue. Habib and Ljungqvist (2001) argue that underpricing allows for cost savings in other areas of marketing the issue. Demers and Lewellen (2003) assert that underpricing brings attention to the stock on the opening day. Boehmer and Fishe (2001) demonstrate that underpricing increases the after-issue trading volume of the stock. Derrien (2005) and Ljungqvist et al. (2006) build upon the work of Miller (1977) and claim that issuers and the regular customers of investment bankers benefit from the presence of sentiment investors (noise traders) in the market for an initial public offering (IPO). Cook et al (2006) argue that investment bankers have an incentive to promote an IPO to induce sentiment investors into the market for it and consequently, an investment banker's ability to market an IPO to sentiment investors is important.

Sixth, underpricing broadens the ownership base after the IPO. Booth and Chua (1996) propose that underpricing helps ensure a wide base of owners to increase the liquidity of the newly public firm. Brennan and Franks (1997) agree that underpricing allows for a wide base of owners but argue that the motivation is to entrench management. Stoughton and Zechner (1998) argue that underpricing allows for the creation of a block holder that can increase monitoring.

Seventh, underpricing may facilitate questionable practices. Maynard (2002) and Griffith (2004) suggest that underpricing permits spinning. Aggarwal (2003), Fishe (2002), and Krigman, Shaw and Womack (1999) argue that underpricing allows for

the practice of flipping¹⁰³ by favored investors. Ljungqvist and Wilhelm (2003) assert that underpricing enriches friends and family through directed share programs.

The eighth and final explanation is by Loughran and Ritter (2002), who advance a behavior theory that suggests issuers are pleasantly surprised with the amount they can raise in the IPO (i.e., their new-found personal wealth). Under Prospect theory¹⁰⁴, they are not significantly concerned with underpricing and therefore it exists.

In this study, two underpricing issues are explored, namely expectations and explanations. The respondents were asked to indicate the level of underpricing (overpricing) they expected for their IPO and the actual underpricing (overpricing) that occurred. The respondents were asked: “*What per cent under/overpricing did you expect from the offer price to the first day closing price?*” The majority of the respondents (77%) replied to the question, with a median (mean) expected underpricing of 25% (69.35%). This expectation compares to an actual median (mean) underpricing of 16.07% (116.61%)¹⁰⁵ for the companies that completed an IPO over the period 1997-2004. The respondents’ feedback provides mixed inferences as 30% of the respondents seem not to be able to distinguish between underpricing and overpricing¹⁰⁶ while the rest seem to be informed on underpricing expectations.

Regarding explanations, respondents are asked to indicate on a five-point scale (1=not important; 5=very important), “*To what extent do you feel the following led to the level of underpricing you might have expected?*”, the results in Table 40 show that the majority (68.4%) of the respondents rate as not important the issue of mitigating future litigation by investors who claim the offer price was too high. This

¹⁰³ The practice of buying the shares in an IPO and then selling the shares immediately after the start of public trading of the shares to turn an immediate profit.

¹⁰⁴ Prospect theory formulated by Kahneman and Tversky (1979) asserts that individuals make choices under uncertainty by maximising a value function that evaluates wealth changes, rather than an expected utility function that ranks choices according to the level of expected utility. The value function is positive and concave in the domain of positive changes and negative and convex in the domain of negative changes.

¹⁰⁵ Excluding outliers, the corresponding numbers are 5.66% and (76.90%).

¹⁰⁶ A glossary of the main terms in the questionnaire was given to respondents as an appendix to the questionnaire explaining amongst others the meaning of underpricing and the difference between underpricing and overpricing.

is consistent with the fact that between 1997 and 2002 (June) – the period that the great majority of the IPOs took place in the Cyprus Stock Exchange – there was no legal recourse either to the issuer or the underwriter for matters of mispricing an issue. The majority of the respondents also places small importance on the cascading effect and their personal wealth.

Insert table 39 – Expectations for the level of underpricing

Respondents view three (3) rationales as moderately important sources of underpricing namely, (1) a desire on the part of the underwriters to incur the favour of institutional investors, (2) a desire to widen the ownership base and (3) to increase the after-issue trading of the stock. The low scores on marketing, spinning and flipping indicate that respondents generally seem to place a certain degree of confidence in their underwriters and the underwriting process.

Insert table 40 - Actual observed level of underpricing

Brau and Fawcett (2006) in their survey of CFOs find that the latter are well informed on underpricing expectations. Moreover, the majority of CFOs believe that underpricing serves to compensate investors for taking the risk of the IPO. CFOs also view three other rationales as important sources of underpricing namely, a desire on the part of underwriters to incur the favour of institutional investors, a desire to achieve a wide base of owners and a desire to increase post-issue trading volume. CFOs attribute most underpricing to market uncertainty and the lack of perfect information.

VI. Signalling in IPOs

Due to asymmetric information between IPO insiders and potential investors, signaling theory continues to be an important component of IPO research. Early papers, such as Leland and Pyle (1977), argue that selling insider shares and selling a large portion of the firm in the IPO served as negative signals to potential investors. Since that time, other researchers have used the context of IPOs to advance signaling theory. Within signaling theory is the idea of certification. Generally, using prestigious underwriters (e.g., Booth and Smith (1986), Carter and Manaster (1990), Carter, Dark, and Singh (1998)), using a reputable accounting firm (e.g., Titman and Trueman (1986), Beatty (1989), Michaely and Shaw (1995)), and having Venture Capital backing (e.g., Megginson and Weiss (1991) and Barry et al. (1990)) serve as strong signals or certification that the firm going public is a good firm.

Three other positive signals are proposed in the literature. First, Welch (1989), Allen and Faulhaber (1989), and Chemmanur (1993) model that only good firms can afford to dissipate wealth by underpricing. Second, Courteau (1995) and Brau, Lambson, and McQueen (2005) model that insiders who commit to a long lock-up period of time after the IPO in which insiders agree not to sell personal shares-signal firm quality. Third, Teoh, Welch, and Wong (1998) suggest that a history of strong earnings signals future strong performance.

In Table 41, the respondents when asked: “*What type of signal do the following actions convey to investors regarding the value of a firm going public?*”, they cited as the most important signal the strong historical earnings of an IPO firm¹⁰⁷, followed by the usage of a top investment bank as underwriter and manager of the IPO, the commitment by insiders to a lock-up period, the use of a big-five accounting firm, a large first-day share jump and the issue of free warrants. The selling of insider shares in the IPO and the selling of a large portion of the firm in the IPO are cited as strong negative signals. The reasons cited as negative signals were actually

¹⁰⁷ The CSE regulations basically made the listing of newly incorporated companies or companies with less than three years of track record (audited accounts for three years) almost impossible. An exception was to list through the market for project companies. Only one(1) company was listed through this route.

observed in reality as most of the IPO firms did not sell existing shares nor did they sell more than 50% of their company's total shareholding.

Insert table 41 – Signalling

Brau and Fawcett (2006) find that CFOs of large firms view strong historical earnings as the most positive signal in the IPO process. Using a top investment bank is the second-strongest positive signal and committing to a long lock-up is the third-strongest positive signal. Selling a large portion of the firm, issuing units, and selling insider shares are all viewed as negative signals.

VII. IPO process design

In this section, a few IPO topics are addressed that have not generated a large amount of literature, but are still of interest and are combined in one section for brevity.

First, management's concern is investigated regarding the threat of negative accusations stemming from the practice of 'window dressing' in the IPO prospectus. Teoh, Welch, and Wong (1998a) find evidence suggesting that naïve investors may be systematically fooled by earnings management operations of 'window dressing', aimed at reporting earnings in excess of cash flows by taking opportunistic positive accruals. There is high information asymmetry between investors and issuers at the time of the IPO. If buyers rely on earnings reported in the prospectus, but are unaware that they are inflated by accruals, they will pay too high a price. They find a significant ability of discretionary accruals to predict IPO share underperformance, suggesting that as information about the firm is revealed over time, investors may recognise that earnings are not maintaining their momentum, and adjust prices. In fact, when inflating accruals firms borrow income from future periods so that managers cannot overstate earnings over long periods of time without being detected.

The same results are obtained by Roosenboom, van der Goot, and Mertens (2003) who studied a sample of 64 Dutch IPOs over the period 1984 And 1994. They find that IPO firms do manage their earnings during the fiscal year of the issue; moreover, companies which lavish on discretionary accruals experience worse long-run stock-price performance.

Several other studies have documented the use of earnings management related to securities offerings in the United States. Friedlan (1994) shows that IPO firms make income-increasing accruals in the most current statements included in the prospectus. In contrast, Aharony, Lin, and Loeb (1993), find little, if any, manipulation in the periods preceding the IPO. Ball and Shivakumar (2008) contrary to popular belief, find that IPO firms report earnings more conservatively due to higher quality reporting demanded by public firms. Magnam and Cormier (1997) report that Canadian IPOs take deliberate steps to move reported earnings numbers in the first

year as a public company toward their voluntary forecast made at the time of the IPO.

Li, Zhang, and Zhou (2005) argue that the degree of earnings management is inversely related to the quality of an issuing firm. Low quality IPOs tend to engage in more earnings management and are more likely to delist and delist sooner.

Second, the importance of a unit offering¹⁰⁸ as a process issue is considered. Firms that issue unit IPOs are small, risky, marketed by less reputable underwriters than those that market share-only IPOs, and generally are service oriented and high technology companies (Schultz 1993; Jain 1994). Barry, Muscarella, and Vetsuypens (1991) note that when warrants are granted to underwriters as part of the IPO arrangement, they represent a significant component of the aggregate compensation and drive up the cost of going public. Schultz (1993) maintains that unit IPOs are multistage financing arrangements that lower agency costs by reducing the probability that excess cash will be invested in negative net present value projects. Chemmanur and Fulghieri (1997) propose a competing justification for unit IPOs. In a world characterized by asymmetric information, they develop a theory in which high-risk firms issue units.

In response to the question “*From your perspective, how important were the following IPO process issues*”, Table 42 shows that certain process issues are important to the respondents e.g., (1) the need to carry out financial and legal due diligence, (2) placing shares privately prior to the IPO, (3) the offering to include free warrants, and, (4) the threat of accusations pertaining to window dressing.

Before June 2002¹⁰⁹, there was no requirement from the Cypriot authorities for a financial and legal due diligence nor was any requirement for a lock-up and the IPO underwriters did not have any legal responsibility to investors and issuers alike apart from providing comfort letters to cover themselves from misrepresentation. The

¹⁰⁸ When warrants are bundled with equity in an IPO, the security is known as unit IPO. Practitioners often refer to such arrangements as ‘sweeteners’ which encourage subscription in IPOs where interest is otherwise low.

¹⁰⁹ In June 2002, the new law concerning financial services companies was enacted and alongside the duties of the underwriters in case of new offerings.

majority of the respondents replied that the threat of accusations pertaining to window dressing in the prospectus was a moderately important IPO process issue.

Insert table 42 – IPO process issues

Brau and Fawcett (2005) argue that CFOs recognise the importance of presenting strong earnings in the prospectus, but are not pre-occupied with potential negative backlash from window dressing.

VIII. Other IPO issues

Each of the previous sections addresses issues pertaining to the process of going public. During the process and even before the decision to go public, it is reasonable to assume that firms have certain concerns. It is these concerns that are explored in this section. In addition, the knowledge of the respondents is examined on a number of certain parameters which are known to be important empirically within the IPO conjecture.

When asked the question *“To what extent did each of the following create concern in the decision to conduct an IPO?”* the respondents’ greatest concern was their desire to maintain decision-making control, followed by the fact that they wanted to avoid ownership dilution and the market/industry conditions. Disclosing information to competitors was also found to be a moderately important concern together with the costs/fees of the IPO and the reporting requirements of the C.S.E.. The respondents’ replies also point to the fact that they had no concern being acquired by another firm, possibly because they would have never conducted the IPO if they have had to forego control of their firms. Moreover, no IPO took place in the C.S.E. for which, the owners sold control of the firm (see table 12 for results).

The majority of the respondents replied that smaller companies are less likely to go public. The majority of the respondents also replied that younger companies are less likely to go public as well as that riskier companies are more likely to go public. Highly leveraged companies are more likely to go public according to the majority of the respondents. It is interesting to note that only a small minority of the respondents firms made a secondary equity offering and an even smaller percentage made a secondary debt offering. Overall, respondents seem to be aligned with academic literature on issues such as size, age and risk insofar as IPOs are concerned.

The respondents also commented on the reduction of bureaucracy and the delays of the CSE authorities in reviewing IPO applications. The delay in reviewing applications was at very high levels as the average period for a company to list on the Cyprus Stock Exchange from the day it applied to the day of listing was a staggering 337 days. This delay exacerbated the risk of the underwriters as well as the risk of

failure of the IPO. On the one hand, the underwriters had to provide ‘hard’ underwriting – by law – to the issuers for that part of the issue which was destined for the wider public.

The huge delay thus increased their risk since the Cyprus Stock Exchange was on a downhill since mid-November 1999. One can easily wonder why the underwriters actually stayed in the ‘game’ with all the perceived risks looming over them. One possible answer could be the fact that many companies had already executed private placements to a large number of investors (mostly retail) and therefore, the underwriters could not easily persuade their clients to return the monies to the investors so that they could walk away from the IPO. These private placement proceeds in many cases were expended by the issuers long before the IPO. By taking this long to approve a listing, the money was held up in companies that executed large private placements and therefore, the investors soon run out of cash as they were all waiting for the companies to get listed so that they could liquidate their holdings. Thus, new issues were destined to fail due to the lack of liquidity in the primary market.

On the other hand, the companies were caught in a spiral since as market conditions worsened their IPO was most probably destined to fail, thus making difficult to find the right number of investors to achieve the necessary float.

Insert table 43 – Value signalling

IX. Conclusions

Cypriot managers' insights into the IPO process are studied. By surveying managers to obtain a real-world perspective of the IPO process, one can compare their beliefs and experiences to both academic theory and the findings of empirical research. One can also compare the responses of managers in an emerging market with those of managers in a highly developed market.

It is found that in some areas, harmony is observed between managers' beliefs and academic theory. But in other key areas, managers' perceptions seem to diverge from traditional academic theory.

It is also observed that Cypriot managers' overall views coincide at large with views of managers in a country (US) with arguably the most advanced capital market in the world.

Specifically the summarised key conclusions of the research of this survey are:

- Cypriot managers cite the enhancement of their firm's reputation as the single most important motivation for going public. Grooming of their firms to acquire other companies (or be acquired) by raising their reputation (visibility), and placing their shares in an environment whereby, their value is established seems to be their main motivational frame.
- The respondents' replies seem to support the window of opportunity hypothesis (Loughran and Ritter (1995)) seeking to go public at times that portends a high stock price. The window is articulated in terms of the overall stock market and industry conditions rather than IPO market conditions.
- The underwriter selection seems to be driven mainly by the underwriter's overall reputation and status. Also the underwriter's industry expertise and connections were highly rated as well as the institutional and retail investor client base of the underwriter.
- Cypriot managers' knowledge on underpricing is mixed as it seems that a number of them are not able to distinguish between underpricing and overpricing in contrast to the great majority of the respondents in Brau and

Fawcett (2006) survey. Cypriot managers feel that underpricing exists to incur the favour of institutional investors.

- Respondents in this survey cite historical earnings as the most important positive signal regarding their firm's value which coincides with the view of respondents in Brau and Fawcett (2006) survey. Lock-ups and using prestigious underwriters are also cited as strong signals also agreeing with Brau and Fawcett respondent. Cashing out by insiders is considered as a negative signal, a view which also coincides with that of respondents in Brau and Fawcett (2006) survey.
- Cypriot managers view the need to carry out financial and legal due diligence as the most important IPO process design issue. Similarly to respondents in Brau and Fawcett (2006), window dressing is not found to be of particular importance.
- Cypriot managers' concern on conducting an IPO seems too focused on the desire to maintain decision-making control as well as market/industry conditions and avoiding ownership dilution. Responses in Brau and Fawcett (2006) coincide with those in the survey, but placing more importance on the avoidance of ownership dilution. They also agree that maintaining decision-making control is the most important criterion for conducting an IPO.
- Cypriot managers seem to understand what type of company usually lists its shares, denoting an understanding of key issues of the academic literature.

Chapter 4 – Overall summary and conclusions

I. Introduction

This last chapter presents an overall summary of the thesis and its conclusions. The chapter is organised as follows: Section II presents a general overview of the study; Section III provides a summary of the main results from the three empirical chapters. Section IV discusses the implications of the studies; Section V describes the limitations of the study; Section VI offers some suggestions for future research and finally Section VII summarises and concludes the research.

II. Overall view of the study

The primary aim of this study is to explore the performance of IPOs in the Cyprus Stock Exchange and the possible influence of earnings management on these IPOs. The study also presents the results of a questionnaire survey of managers of CSE listed companies on various aspects of the extant IPO academic literature. Even though similar studies have been the matter of academic research in many developed markets, the evidence from novice markets, such as Cyprus, is scant. The thesis provides the first thorough study of IPOs in the Cyprus Stock Exchange over a period of six years (1997 to 2002), investigating the short- and long-run performance of these IPOs and whether these companies engage in income increasing accruals prior to their IPOs.

Cyprus Stock Exchange, a start-up stock exchange, with a relatively new but comparably densely market for listed companies, poses an interesting research case. In particular, the institutional characteristics that existed in the Cypriot capital market over the period 1997 to 2002 e.g., a novice stock exchange, inexperienced market participants, lack of investment options available because of various restrictions (e.g., capital flows and interest rates), weak legal and institutional framework, combined with a number of socioeconomic and political factors at the time makes IPOs in the CSE a subject of great interest. This study contributes to the existing knowledge of the performance of IPOs in emerging/novice market stock exchanges and earnings management.

A total of CY£676.3 mln (€1.15 bn) of fresh equity was raised through IPOs over the period 1997 to 2002 with 87.7% raised in the two years 2000 and 2001. The General Index of the CSE rose from 82 units in January 1997 to 852 units in November 1999 and declining back to 103 units by September 2001. The market capitalisation of the CSE rose from €2.46 bn in 1997 to €20.73 bn in 1999 and declining to €6.67 bn in 2001. In order to address IPO performance, this thesis employs a sample of 79 IPOs listed in the CSE over the period 1997 to 2002. The sample represents 64% of the total number of firms that were listed over the period. Earnings management is investigated using a sample of 46 IPOs and the questionnaire survey sample consists of 30 responses which represents a response rate of 31%.

III. Summary of the results

This thesis has presented 3 empirical studies concerning CSE IPOs, the results of which are summarised in this section.

A. The price performance of IPOs in the CSE 1997-2002

The results regarding the performance of the 79 CSE IPOs are in agreement with the existing international evidence. In particular, the findings show the existence of ultra-high returns, the existence of a hot issue period, and long-run under-performance of IPOs over a three-year period. Specifically, one can observe that IPOs in the CSE offered investors initial (first day) returns that are amongst the higher in the World even after adjusting for the hot issue period of 1999. Also, Cypriot firms seem to exploit a ‘window of opportunity’ that was opened in the market for listing.

Moreover, Cypriot IPOs underperform in the long-run as the majority of IPOs in academic studies do. Cumulative Average Returns (CARs) and Buy-and-Hold Abnormal Returns (BHARs) are calculated for three time periods, namely, 12-, 24-, and 36-months. CARs are found to be negative for all years in the sample period in the 24-, and 36-month periods (BHARs are also found to be in negative territory for the 24- and 36-month periods except for the year 2000 where their mean is marginally positive). In the 12-month period, average CARs over the sample period

are all positive. Moreover, IPOs in the ‘hot’ issue period have worse performance than the rest of the pack which confirms that findings of many researchers that IPOs in ‘hot’ periods have a worse performance than the rest in the long-run.

B. Earnings management and IPOs in the CSE 1997-2002

Using both univariate and multivariate tests Discretionary Accruals (DA) are observed to rise before the IPO and reverse the year following the first full year of listing. The same findings are also reflected in profitability measures.

Analysing the multivariate relationship between short- and long-run IPO returns, evidence is found that discretionary accruals have a positive and statistically significant relationship with underpricing. Moreover, evidence is found that the components of accruals explain well the long-run stock price performance.

Overall the evidence suggests that the managers of CSE IPOs opportunistically advance accruals in an attempt to improve earnings prior to the IPO. Income increasing accruals drove earnings higher before the IPO and reversed after the IPO. Earnings management in CSE IPOs seems to be part of wider institutional and procedural inefficiencies that existed in the IPO process amplifying the level of first day returns whilst at the same time, enhancing long term underperformance.

C. A survey on managerial attitudes regarding IPOs in the CSE

Surveying managers to obtain a real-world perspective of the IPO process, it is found that in some areas, harmony is observed between managers’ beliefs and academic theory. But in other key areas, managers’ perceptions seem to diverge from traditional academic theory.

Six specific aspects of the IPO process were studied namely, (1) motives for going public; (2) the timing of IPOs; (3) criteria for choosing an underwriter; (4) IPO underpricing; (5) IPO signalling; and (6) reasons to stay private. Extra insight was also attempted to be added by testing managerial behaviour on certain IPO process issues.

Evidence is found that Cypriot managers' overall views coincide at large with views of managers in the US, a country with arguably the most advanced capital market in the world.

IV. Implications of the study

Several general implications can be drawn out of this thesis for academics, regulators and policy makers, investors, professionals such as security analysts and certifying agents and companies aiming at listing their shares. Specifically:

- The academic community, which could utilise the findings of the study to understand better the role of institutional setting on IPO 'anomalies' as well as the maturity of stock exchanges on IPO price performance behaviour.
- Policy makers and regulators alike to assist them in drafting improved laws for the future as well as avoiding mistakes of the past. Specifically, the laws must aim at protecting the minority shareholders and making more accountable certifying agents and managers of IPO firms.
- Investors and portfolio managers who will be more educated and informed on making better decisions in the future regarding IPOs especially in newly formed equity capital markets. In particular, stock exchanges that lack strong institutional framework could offer excellent opportunities for ultra-high short-run returns. Alternatively, investors and portfolio managers will be informed so as to avoid long-run losses.
- Professionals (such as corporate financiers, accountants and lawyers), especially those dealing with IPOs who will be able to draw on the findings of the study to improve the knowledge and professional practices when dealing with issuers. Principally, certifying agents to become more wary of firms that employ accruals aggressively to enhance valuation parameters and achieve higher gross proceeds.
- Prospective issuers to become more educated on matters involving avoiding the boosting accruals and consequently IPO valuations as this is a short-lived trick of becoming unpopular with market participants.

V. Limitations of the study

The results and implications of this study should be considered in the context of the following limitations.

First, the sample employed in this study is relatively small compared to studies on developed markets. However, as Agathee et al. (2012) and Gasbarro et al (2003) argue, the sample size is also relatively small in other emerging market IPO studies citing a number of studies. Moreover, recognising that the size of the sample is relatively small, a number of robustness checks were performed to verify the sensitivity of the results e.g., reducing the impact of outliers.

Second, this study calculates the first-day stock market performance. A number of studies have argued that in stock exchanges where liquidity is relatively thin, first day returns should be calculated after the first week. In this study, first day returns are also calculated for 5-days, 30 days, 60 days and 90 days and they all show that the first-day returns remain exceptionally high.

Third, due to its young age, the CSE, at the time of the study, does not have enough listed companies to form a control group which researchers can employ to make comparisons. This is needed in earnings management studies when the Jones or modified Jones models are employed. However, as Dechow et al. (1995) demonstrated, all the earnings management models have weaknesses. The model employed in this study, despite its weaknesses produces results that provide evidence that earnings management is observed. The model compares accruals in a *test* period with accruals in a *benchmark* period and attributes deviations from the benchmark measure to accounting discretion. In order to account for the growth that usually exists in IPO firms, total accruals are proportionally controlled with sales in successive periods. Specifically, the amount of total accruals that is attributable to discretion is the difference between total accruals in the test period standardised by sales in the test period and total accruals in the benchmark period standardized by sales in the benchmark period. Total accruals are calculated as the difference between Net Income before extraordinary items and cash flow from operations.

As Graham and Harvey mention (2001) “...*Surveys measure beliefs and not necessarily actions. Survey analysis faces the risk that the respondents are not representative of the population of firms or that the survey questions are misunderstood*”. The survey, despite the relatively small sample (140), has a high response rate (30%) and provides information on the views of managers in publicly listed companies in a novice stock exchange.

VI. Suggestions for future research

While this study is the first comprehensive study of Initial Public Offerings in the Cyprus Stock Exchange, the findings suggest a number of avenues for further research. It would be of considerable interest to study the IPOs that were listed after 2002 so that the effect of due diligence rules and the change of the law making underwriters responsible for the price is exposed. Moreover, it would also be of interest to carry out an accounting-based operating performance analysis of the IPOs that were listed over the period 1997 to 2002 both pre- and post-IPO. This would provide an alternative analysis as to the reasons of the decline in IPO price performance in the long-run. Additionally, a future study could utilize a cross country variation in institutional factors aiming to explain differences in the results and therefore the impact of certain institutional factors.

Future research may also compare earnings management of IPOs pre- and post-enacting of the CySEC law which makes due diligence in IPOs compulsory and establishes clearly the responsibilities of underwriters towards investors. In this way, one can show whether earnings management continued or was minimised by certifying agents.

VII. Summary and conclusions

Overall the results of this thesis support the existing literature i.e., that IPOs are underpriced in the short run and underperform in the long-run over a 36-month period. It is evident that CSE IPOs produced exceptional first-day returns over the period 1997-2002. Cypriot firms exploited a ‘window of opportunity’ to list their

shares. However, the large inefficiencies and continuous change in the regulatory and institutional framework of the market resulted in huge delays in listing which ultimately affected performance. CSE IPOs also underperformed over a 36-month period as the majority of IPOs in most academic studies do. Moreover, IPOs in the hot issue period have worse performance than the rest of the pack which also confirms the findings of many researchers that IPOs in 'hot' periods have a worse performance than the rest in the long-run.

CSE IPO firms seem to manage their earnings by making income increasing accruals before going public which reverse after listing. Moreover, there is also evidence that discretionary accruals have a positive and statistically significant relationship with short-run returns, meaning that as accruals rise, underpricing increases. Likewise, the multivariate results show that there is a negative and statistically significant relationship with the components of accruals and long-run performance.

Through a questionnaire survey of Cypriot managers in CSE listed companies, there is evidence that in certain areas there is harmony between these managers' beliefs and IPO academic theory. But in several other key areas, there is also divergence of views. All in all, Cypriot managers' views coincide at large with views of US IPO firms CFOs in similar studies.

APPENDICES

APPENDIX A - IPO underpricing in the world

Country	Reference	Period	Sample Size	Mean Underpricing
Argentina	Eijgenhuijsen and van der Valk	1991 – 1994	20	+ 4.4%
Australia	Lee, Taylor & Walter; Woo; Pham; Ritter	1976 – 2011	1,562	+21.8%
Austria	Aussenegg, Ritter	1971 – 2010	102	+ 6.3%
Belgium	Rogiers, Manigart and Ooghe; Manigart; DuMortier; Ritter	1971 – 2006	114	+13.5%
Brazil	Aggarwal, Leal, and Hernandez; Saito; Ushisima	1979 – 2011	275	+ 33.1%
Bulgaria	Nikolov	2004 – 2007	9	+ 36.5%
Canada	Jog and Riding; Jog and Srivastava; Kyzanowski, Lazrak and Rakita; Ritter	1971 – 2010	696	+ 6.7%
Chile	Aggarwal, Leal, and Hernandez; Celis and Maturana; Ritter	1982 – 2006	65	+ 8.4%
China	Chen, Choi and Jiang; Jia and Zhang	1990 – 2010	2,102	+137.4%
Cyprus	Gounopoulos, Nounis and Stylianides	1999 – 2011	66	+ 20.8%
Denmark	Jakobsen and Sorensen; Ritter	1984 – 2011	164	+ 7.4%
Finland	Keloharju	1984 – 2006	162	+ 17.2%
France	Husson and Jacquillat; Leleux and Muzyka; Paliard and Belletante; Derrien and Womack; Chahine; Ritter; Vismara	1983 – 2010	697	+ 10.5%
Germany	Ljungqvist; Rocholl; Ritter; Vismara	1978 – 2011	736	+ 24.2%
Greece	Nounis, Kazantzis and Thomas; Thamadakis, Gounopoulos and Nounis	1976 – 2011	373	+ 50.8%
Hong Kong	McGuinness; Zhao and Wu; Ljungqvist & Yu; Fung, Gul, and Radhakrishnan; Ritter	1980 – 2010	1,259	+ 15.4% ^a
India	Marisetty and Subrahmanyam; Ritter	1990 – 2011	2,964	+ 88.5%
Indonesia	Suherman	1989 – 2011	386	+ 25.7%
Iran	Bagherzadeh	1991 – 2004	279	+ 22.4%
Ireland	Ritter	1999 – 2006	31	+ 23.7%
Israel	Kandel, Sarig, and Wohl; Amihud and Hauser; Ritter	1990 – 2006	348	+ 13.8%
Italy	Arosio, Giudici and Paleari; Cassia, Paleari, and Redondi; Vismara	1985 – 2009	273	+ 16.4%
Japan	Fukuda; Dawson and Hiraki; Hamao, Packer, and Ritter; Hebner and Hiraki; Kaneko and Pettway;	1970 – 2011	3,136	+40.2% ^a
Jordan	Marmar	1999 – 2008	53	+ 149%

Korea	Dhatt, Kim, and Lim; Ihm; Choi and Heo; Mosharian and Ng, Cho; Ritter	1980 – 2010	1,593	+ 61.6%
Malaysia	Isa; Isa and Yong; Yong; Ma	1980 – 2009	413	+ 62.6%
Mauritius	Bundoo	1989 – 2005	40	+15.2%
Mexico	Aggarwal, Leal, and Hernandez; Eijgenhuijsen and van der Valk	1987 – 1994	88	+ 15.9%
Netherlands	Wessels; Eijgenhuijsen and Buijs; Jenkinson, Ljungqvist and Wilhelm; Ritter	1982 – 2006	181	+ 10.2%
New Zealand	Vos and Cheung; Camp and Munro; Ritter	1979 – 2006	214	+ 20.3%
Nigeria	Ikoku; Achua	1989 – 2006	114	+ 12.7%
Norway	Emilsen, Pedersen, and Sættern; Liden; Ritter	1984 – 2006	153	+ 9.6%
Philippines	Sullivan and Unite; Ritter	1987 – 2006	123	+ 21.2%
Poland	Jelic and Briston; Woloszyn	1991 – 2012	309	+ 13.3%
Portugal	Almeida and Duque; Ritter	1992 – 2006	28	+ 11.6%
Russia	Ritter	1999 – 2006	40	+ 4.2%
Saudi Arabia	Al-Anazi, Foster and Liu	2003 – 2010	76	+ 264.5%
Singapore	Lee, Taylor and Walter; Dawson; Ritter	1973 – 2011	591	+ 26.1%
South Africa	Page and Reyneke; Ali, Subrahmanyam and Gleason; Ritter	1980 – 2007	285	+ 18.0%
Spain	Ansotegui and Fabregat; Alvarez Otera	1985 – 2006	128	+ 10.9%
Sri Lanka	Samarakoon	1987 – 2008	105	+ 33.5%
Sweden	Rydqvist; Schuster; Simonov; de Ridder	1980 – 2011	406	+ 26.1%
Switzerland	Kunz, Drobetz, Kammermann and Walchli; Ritter	1983 – 2008	159	+ 28.0%
Taiwan	Chen	1980 – 2006	1,312	+ 37.2%
Thailand	Wethyavivorn and Koo-Smith; Lonkani and Tirapat; Ekkayokkaya and Pengniti	1987 – 2007	459	+ 36.6%
Turkey	Kiyamaz; Durukan; Ince; Kucukkocaoglu	1990 – 2011	355	+ 10.3%
UK	Dimson; Levis	1959 – 2011	4,877	+ 16.1%
USA	Ibbotson, Sindelar, and Ritter; Ritter	1960 – 2012	12,340	+ 16.8%

Source: Loughran, T., J.R. Ritter, and K. Rydqvist, 2004, *Initial Public Offerings: International Insights*, *Pacific-Basin Journal of Finance* 2, 165-199, updated 1st of March 2013 (<http://bear.warrington.ufl.edu/ritter/>)

APPENDIX B - Long run price performance of IPOs

Country	Study	Sample period	Sample size	Window (years)	Return
Australia	Lee, P.J., S.L. Taylor, and T.S. Walter (1996)	1976-89	266	3	-51.0%
Austria	Aussenegg (2006)	1984-93	57	3	-47.4%
Brazil	Aggarwal, R., R. Leal, and L. Hernandez (1993)	1980-90	62	3	-47.0%
Canada	Shaw, D.C. (1971)	1956-63	105	5	-32.3%
Chile	Aggarwal, R., R. Leal, and L. Hernandez (1993)	1982-90	28	3	-23.7%
Finland	Keloharju, M. (1993)	1984-89	79	3	-26.4%
France	Chahine (2004)	1996-98	168	2	-9.9%
Germany	Schlag C., and A. Wodrich (2000)	1884-14	163	5	-7.8%
Germany	Jaskiewicz, P., M. Gonzalez, S. Menendez and D. Schiereck (2005)	1990- 00	153	3	-32.5%
Germany	Ljungqvist, A. (1997)	1970-90	180	3	-12.1%
Great Britain	Levis, M. (1993)	1994-02	712	3	-8.1%
Greece	Thomadakis, Nounis, and Gounopoulos (2010)	1980-88	254	3	-15.4%
Hong Kong	McGuinness, P. (1993)	1980-90	72	2	-18.3%
Italy	Giudici, G., and S. Paleari (1999)	1985-95	84	3	-2.6%
Japan	Cai, J. and K.C.J. Wei (1997)	1971-92	180	5	-26.0%
Korea	Kim, J.B., I. Krinsky, and J. Lee (1995)	1985-88	99	3	+91.6%
Malaysia	Paudyal, K., B. Saadouni, and R. Briston (1998)	1984-94	62	3	+9.0%
The Netherlands	Doeswijk, R.Q., H.S.K. Hemmes, and P. Venekamp (2005)	1977-01	154	1 and 3	-10.0%
New Zealand	Firth, M. (1997)	1979-87	143	5	-17.9%
Poland	Jelic, R., and R. Briston (2003)	1991-99	19	3	-66.8%
Portugal	Duque, J., and M. Almeida (2000)	1992-98	21	1	-2.8%
Singapore	Lee, P.J., S.L. Taylor, and T.S. Walter (1996)	1973-92	132	3	+0.8%
Spain	Alvarez, S., and V. Gonzalez (2005)	1987-97	57	3	-31.1%
Sweden	Loughran,T., J.R. Ritter, and K. Rydqvist (1994)	1980-90	162	3	+1.2%
Sweden	Brounen, D., and P.M.A. Eicholtz (2002)	1984-99	13	1	+18.9%
Switzerland	Kunz, R.M. and R. Aggarwal (1994)	1983-89	42	3	-6.1%
Switzerland	Drobetz, W., M. Kammermann and U. Walchli (2005)	1983-00	120	3	-7.45%
Turkey	Kiyamaz, H. (1998)	1990-95	138	3	+44.1%
United Kingdom	Brounen, D., and P.M.A. Eicholtz (2002)	1984-99	24	1	-4.53%
United States	Cusatis, P.J., J.A. Miles and J.R. Woolridge (1993)	1965-88	146	3	+33.6%
United States	Loughran, T. (1993)	1967-87	3,656	6	-33.3%
United States	Loughran, T., and J.R. Ritter (1995)	1970-90	4,753	5	-30.0%
United States	J.R. Ritter (1991)	1975-84	1,526	3	-29.1%

France, Germany, Italy, Netherlands, Spain, Sweden, Switzerland	Schuster, J.A. (2003)	1988-98	972	3	-20.5%
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Source: (a) Jenkinson, T., and A. Ljungqvist, 2001, *Going Public: The theory and evidence of how companies raise equity finance*, Oxford University Press.

(b) Gajewski, J.K., and C. Gresse, 2006, *A Survey of the European IPO Market*, Unpublished Working Paper, European Capital Markets Institute (ECMI).

(c) Boulton, E., J.F. Gajewski, C. Gresse, and F. Labegorre, 2007, *Are IPOs still a puzzle? A survey of the empirical evidence from Europe*, *Revue de l'association francaise de finance*, 28, 5-41.

APPENDIX C - Definitions of earnings management from academic literature***Definition no. 1***

Earnings management studies examine whether managers act as if they believe users of financial reporting data can be misled into interpreting reported accounting earnings as equivalent to economic profitability.

Fields, T. Lys, T. and Vincent L., 2001, Empirical Research on Accounting Choice, Journal of Accounting and Economics, 31, 255-307.

Definition no. 2

Earnings management occurs when managers exercise their discretion over the accounting numbers with or without restrictions. Such discretion can be either firm value maximizing or opportunistic.

Watts, R.L., and Zimmerman, J.L., 1990, Positive Accounting Theory: A ten year perspective, The Accounting Review, 65, 131-156.

Definition no. 3

Earnings management is a purposeful intervention in the external financial reporting process with the intent of obtaining some private gain.

Schipper, K., 1989, Commentary on Earnings Management, Accounting Horizons, 3, 91-102.

Definition no. 4

Earnings Management occurs when managers use judgment in financial reporting and in structuring transactions to alter the financial reports to either mislead some stakeholders about the underlying economic performance of the company, or to influence contractual outcomes that depend on reported accounting numbers.

Healy, P.M. and Wahlen, J.M., 1999, A review of the earnings management literature and its implications for standard setting, Accounting Horizons, 13, 365-384.

Definition no. 5

Earnings management is the intentional misstatement of earnings leading to the bottom line numbers that would have been different in the absence of any manipulation.

Mohanran, P.S., 2003, How to manage earnings management, Accounting World, October.

Definition no. 6

Abnormal accruals occur when management's intervention in financial reporting process has an impact on total accruals, which does not stem from normal economic activities and circumstances.

Blom, M., 2008, MSc Thesis, Erasmus University.

Definition no. 7

Earnings management is the use of operating and discretionary accounting methods to adjust earnings to a desired outcome.

Giroux, G., 2004, Detecting earnings management, John Wiley, Chapter 1, page 2.

Definition no. 8

Earnings management is the product of an executive exercise of judgment by managers of organisations through purposeful time-shifting accounting operations with the sole intention of manipulating financial statements so as to influence the decision-making outcome of users of these statements towards their own goals and/or those of their organisations.

Chandriotis, C.M., November 2013, PhD Thesis, University of Durham

APPENDIX D - Accruals and their meaning in earnings management

Accruals arise when there is a discrepancy between the timing of cash flows and the timing of the accounting recognition of the transaction. Recognising revenues is one such example. Revenues may be recognised after customers advance cash and before total collection is assured. The advance creates a liability termed ‘unearned revenues’. The final payment decreases the asset termed ‘accounts receivable’.

Reported revenues must equal total cash inflows over a firm’s lifetime, and consequently, total accruals must equal zero i.e., accrued balances of assets and liabilities reverse.

Throughout academic literature, there is an effort to distinguish between accruals resulting from managed earnings and normal accruals.

Non-discretionary accruals are accruals that arise from transactions made in the current period that are normal for the firm given its performance level and business strategy, industry conventions, macro-economic events and other economic factors.

Discretionary accruals are accruals that arise from transactions made or accounting treatments chosen in order to manage earnings. Reversals are accruals originating from transactions made in the previous period.

APPENDIX E - Example Survey

Name: _____

Position in the Company now: _____

Role in IPO project (if any): _____

Number of years with the company: _____

Company name: _____

Year of IPO: _____

Thank you for taking the estimated 15-20 minutes to complete this survey. ***We promise strict confidentiality concerning your responses.*** Please answer each of the questions to the best of your knowledge. Words with an asterisk (*) are defined in the glossary (see last page of this questionnaire).

For questions 1-10, circle the number to the right that best fits your opinion on the importance of the issue. Use the scale shown below to match your opinion.

1	Not important
2	Somewhat unimportant
3	No opinion either way
4	Somewhat Important
5	Very Important

For Questions 11-16, please tick the appropriate box that best fits your opinion on subject knowledge.

In Question 17, you are free to express your views on any other issue(s) that you may feel necessary on the subject matter of IPOs.

1. How important were the following *motivations* for conducting the IPO?

	Not			Very	
	<u>Important</u>			<u>Important</u>	
1. To minimise our cost of capital	1	2	3	4	5
2. Debt is becoming too expensive	1	2	3	4	5
3. Our company has run out of private equity*	1	2	3	4	5
4. To create public shares for use in future acquisitions	1	2	3	4	5
5. To allow shareholders to sell part of their shares	1	2	3	4	5
6. To allow venture capitalists (VCs) to cash-out	1	2	3	4	5
7. To enhance the reputation of our company	1	2	3	4	5
8. To establish a market price/value for our firm	1	2	3	4	5
9. To broaden the base of ownership of our firm	1	2	3	4	5
10. To provide management succession for our firm	1	2	3	4	5

2. To what extent did the following influence the *timing* of your possible IPO?

	Not			Very	
	<u>Important</u>			<u>Important</u>	
1. Overall stock market conditions	1	2	3	4	5
2. Industry conditions (conditions in our sector of business)	1	2	3	4	5
3. First-day share price performance of recent IPOs	1	2	3	4	5
4. Other good firms were currently going public	1	2	3	4	5
5. We needed the capital to continue to grow	1	2	3	4	5

3. How important were the following criteria in selecting your *lead IPO underwriter**?

	Not		Very		
	<u>Important</u>		<u>Important</u>		
1. Underwriter's overall reputation and status	1	2	3	4	5
2. Non-equity-related services (e.g., advice on Mergers & Acquisitions, debt)	1	2	3	4	5
3. Fee structure	1	2	3	4	5
4. Pricing and valuation promises	1	2	3	4	5
5. Underwriter's industry expertise and connections	1	2	3	4	5
6. Market making, trading desk and liquidity provision services	1	2	3	4	5
7. Institutional investor client base of the underwriter	1	2	3	4	5
8. Retail client base of the underwriter	1	2	3	4	5
9. Underwriter has a reputation for spinning*	1	2	3	4	5
10. Underwriter is a subsidiary of our company's main commercial bank	1	2	3	4	5

4. What per cent *under/overpricing** *did you expect* from the offer price to the first day closing price? _____% (please write up your estimate in percentage terms)

5. What was the *actual under/overpricing* in your company's IPO? _____ % (if you know please write up in percentage terms)

6. To what extent do you feel the following led to the level of *underpricing* you might have expected?*

	Not			Very	
	<u>Important</u>			<u>Important</u>	
1. To mitigate future litigation by investors who claim the offer price was too high	1	2	3	4	5
2. <i>To compensate investors for taking the risk of the IPO</i>	1	2	3	4	5
3. <i>To ensure a wide-base of owners</i>	1	2	3	4	5
4. To create a large block-holder to serve as a watchdog over company management	1	2	3	4	5
5. To compensate investors for truthfully revealing the price they are willing to pay	1	2	3	4	5
6. Insiders are willing to underprice because the IPO creates personal wealth	1	2	3	4	5
7. To increase share price by starting a cascade effect amongst investors	1	2	3	4	5
8. Underpricing reduces the need for additional IPO marketing costs	1	2	3	4	5
9. To increase the after-issue trading volume of the stock	1	2	3	4	5
10. <i>Underwriters underprice to incur the favour of institutional investors</i>	1	2	3	4	5
11. To increase publicity on the opening day*	1	2	3	4	5
12. So underwriters can make spinning* possible	1	2	3	4	5
13. So underwriters can make flipping* possible	1	2	3	4	5

7. To what extent do you feel the following led to the *actual level of underpricing** observed in your company's IPO?

	Not			Very	
	<u>Important</u>			<u>Important</u>	
1. To mitigate future litigation by investors who claim the offer price was too high	1	2	3	4	5
2. To compensate investors for taking the risk of the IPO	1	2	3	4	5
3. To ensure a wide-base of owners	1	2	3	4	5
4. To create a large block-holder to serve as a watchdog over company management	1	2	3	4	5
5. To compensate investors for truthfully revealing the price they are willing to pay	1	2	3	4	5
6. Insiders are willing to underprice because the IPO creates personal wealth	1	2	3	4	5
7. To increase share price by starting a cascade effect amongst investors	1	2	3	4	5
8. Underpricing reduces the need for additional IPO marketing costs	1	2	3	4	5
9. To increase the after-issue trading volume of the stock	1	2	3	4	5
10. Underwriters underprice to incur the favour of institutional investors	1	2	3	4	5
11. To increase publicity on the opening day*	1	2	3	4	5
12. So underwriters can make spinning* possible	1	2	3	4	5
13. So underwriters can make flipping* possible	1	2	3	4	5

8. What *type of signal* do the following actions convey to investors regarding the value of a firm going public?

	Negative			Positive	
	<u>Signal</u>			<u>Signal</u>	
1. Selling insider shares in the IPO	1	2	3	4	5
2. Selling a large portion of the firm in the IPO	1	2	3	4	5
3. A large first-day share price jump	1	2	3	4	5
4. Using a top investment bank as underwriter and manager of the IPO	1	2	3	4	5
5. Using a big-5 accounting firm*	1	2	3	4	5
6. Having venture capital (VC) backing	1	2	3	4	5
7. Having strong historical earnings	1	2	3	4	5
8. Insiders* commit to a long lock-up*	1	2	3	4	5
9. Issuing free warrants	1	2	3	4	5

9. From your perspective, how important were the following IPO *process issues*?

	Not			Very	
	<u>Important</u>			<u>Important</u>	
1. The threat of accusations pertaining to window-dressing* in the prospectus	1	2	3	4	5
2. An offering which includes free warrants alongside the shares issued	1	2	3	4	5
3. The need to carry out financial and legal due diligence	1	2	3	4	5
4. Placing shares privately before doing an IPO	1	2	3	4	5

10. To what extent did each of the following *create concern* in the decision to conduct an IPO?

	<u>No</u>				<u>Great</u>
	<u>Concern</u>				<u>Concern</u>
1. The Cyprus Stock Market authorities reporting requirements	1	2	3	4	5
2. Costs/fees of an IPO	1	2	3	4	5
3. Desire to maintain decision-making control	1	2	3	4	5
4. We, as a company, have already enough capital	1	2	3	4	5
5. Low price of our share	1	2	3	4	5
6. To avoid earnings per share (EPS) dilution	1	2	3	4	5
7. To avoid ownership dilution	1	2	3	4	5
8. We would prefer to be acquired by another firm (rather than list our shares)	1	2	3	4	5
9. Bad market/industry conditions	1	2	3	4	5
10. Directors' liability	1	2	3	4	5
11. Disclosing information to competitors	1	2	3	4	5

11. Smaller companies are less likely to go public

Yes	No	Don't know
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

12. Younger companies are less likely to go public

Yes	No	Don't know
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

13. Riskier companies are more likely to go public

Yes	No	Don't know
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

14. Highly leveraged* companies are more likely to go public

Yes	No	Don't know
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

15. Our company has a made a secondary equity offering since the IPO

Yes	No	Don't know
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

16. Our company has a made a secondary debt offering since the IPO

Yes	No	Don't know
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

17. Please feel free to add any other comments that you may have (e.g., on procedural, legal, regulatory, institutional aspects etc.)

THANK YOU!

If you would like a copy of the results once they have been completed then please tick this box

QUESTIONNAIRE GLOSSARY

In this section, the terms that are marked with an asterisk () in the questionnaire are explained. We do understand that you may be familiar with these terms, but we need to define them for clarity reasons.*

Private Equity

When equity capital is made available to companies or investors, but not quoted on a stock market. Private equity can be used to develop new products and technologies, to expand working capital, to make acquisitions, or to strengthen a company's balance sheet. The buy-out and buy-in of a business by experienced managers may be achieved using private equity funding. Venture capital is, strictly speaking, a subset of private equity and refers to equity investments made for launch, early development or expansion of a business.

Underwriter

This is usually an investment bank that administers the public issuance and distribution of securities from a company. An underwriter works closely with the IPO company to determine the offering price of the shares and sells them to investors via the underwriter's distribution network.

Spinning

The practice of investment banks setting aside portions of IPO shares of companies they take public for top executives of other companies in exchange for reciprocating business to the investment banks.

Underpricing

The pricing of an IPO at less than its market value. Underpricing can be seen as the difference between the offer price and the price of the first trading day of an IPO. It is usually expressed in percentage terms.

Opening day

The first day of trading the shares of an IPO in a stock exchange.

Flipping

The practice of buying the shares in an IPO and then selling the shares immediately after the start of public trading of the shares to turn an immediate profit.

Big 5-accounting firms

Until 2002, these were PricewaterhouseCoopers, Ernst and Young, Deloitte, Arthur Andersen and KPMG. After Arthur Andersen's demise, they became the big 4 accounting firms.

Insiders

In an IPO, insiders are the owners/shareholders and top management that may have shares and/or share options.

Lock-up

A legally binding contract between the underwriters and insiders of a company (owners, company executives, venture capitalists) undergoing an IPO prohibiting these individuals from selling any shares of the company for a specified period of time. Lock-up periods typically last 180 days (six months) but can on occasion last for as little as 120 days or as long as 365 days (1 year).

Window dressing

The deceptive practice of using accounting tricks to make a company's balance sheet and profit and loss statement appear better than they really are.

Leveraged companies

Companies with a high percentage (over 50%) of bank debt relative to own funds (shareholders' funds) in their balance sheet.

APPENDIX F – TABLES

Table 1 - Average initial returns by selling mechanism

Country	Exchange	Book-building institutional only	Book-building with public offer	Fixed-price offering	Auction
Austria	VSE	yes	no	no	no
Belgium	Euronext Brussels	yes	yes	no	no
Finland	HSE	yes	yes	no	no
France	Euronext Paris	yes (<i>placement</i>)	yes	yes	Various types organised by the exchange (<i>direct admission, minimum price offer, open price offer</i>)
Germany	Deutsche Börse	yes	no	yes	not any more
Greece	ASE	yes	no	no	no
Italy	Borsa Italiana	yes (<i>with fixed price*</i> <i>and with open price**</i>)	no	yes	no
Netherlands	Euronext Amsterdam	yes	no	yes	yes
Poland	WSE	yes	yes	yes	yes
Portugal	Euronext Lisbon	yes	yes	yes (<i>offer for sale</i>)	yes (<i>offer for sale</i>)
Spain	BME	no	yes***	no	no
Sweden	OMX	yes	yes	yes	no
Switzerland	SWX	yes	yes	yes	not any more
Turkey	ISE	yes	no	yes	yes (sale on the ISE)
UK	LSE	yes (<i>placing</i>)	yes	yes (<i>offer for sale at fixed price, offer for subscription at fixed price</i>)	yes (<i>offer for sale by tender offer, offer for subscription by tender offer, open offer</i>)

* Before 1999, in the Italian book-building procedures, a fixed price was offered to institutions at the end of the marketing period prior to actual order submission. In 1999, this practice was abandoned in favour of the book-building with open price.

** Since 1999, book-building with open price has been the general practice in Italy. The final price is determined after collecting orders from institutions, so that they do not know at which price they will effectively buy the shares.

Since 1992, when Royal Decree 291/1992 was published.

Source: Gajewski, J.F., and C. Gresse, (2006), *A Survey of European IPO Market*, ECMI Unpublished Working Paper, Brussels.

Table 2 - Economic Indicators

European Union Economy	1997	1998	1999	2000	2001	2002	2003	2004
<u>GDP at market prices (€ bn):</u>								
- EU (25)	n/a	n/a	8,538	9,148	9,519	9,876	10,038	10,525
- EU (15)	7,454	7,790	8,203	8,764	9,088	9,417	9,584	10,033
<u>Real GDP growth (%):</u>								
- EU (25) (%)	n/a	n/a	3.1	3.9	2.0	1.2	1.3	2.5
- EU (15) (%)	2.6	2.7	3.0	3.9	1.9	1.2	1.2	2.3
<u>GDP per capita (€):</u>								
- EU (25) (€)	n/a	n/a	18,700	20,000	20,700	21,400	21,600	22,600
- EU (15) (€)	19,000	19,800	20,600	22,000	22,700	23,400	23,600	24,500
<u>GDP per capita in PPS</u>								
- EU (25)	104.9	105.0	105.0	105.0	104.8	104.6	104.4	104.2
- EU (15)	115.5	115.4	115.5	115.5	115.5	115.5	115.5	115.5
Consumer price inflation (HICP) (%)	1.7	1.3	1.2	1.9	2.2	2.1	2.0	2.0
Unemployment rate EU (25) (%)	10.5	9.9	9.0	8.1	7.6	7.9	9.0	9.0

Source: Eurostat, ECB

Cyprus Economy	1997	1998	1999	2000	2001	2002	2003	2004
GDP at current prices (CY£ bn)	4.57	4.94	5.30	5.78	6.22	6.43	6.88	7.41
GDP at market prices (CY£ bn)	5.00	5.25	5.51	5.78	6.01	6.14	6.26	6.52
Real GDP growth (%)	2.3	5.0	4.8	5.0	4.0	2.1	1.9	4.2
GDP per capita (CY£)	6,580	6,929	7,338	7,966	8,380	8,977	9,444	9,787
Consumer price inflation (%)	3.6	2.2	1.7	4.1	2.0	2.8	4.1	2.3
Unemployment rate EU (25) (%)	3.4	3.3	3.6	3.4	2.9	3.2	3.5	3.6
Public deficit as a percentage of GDP (%)	5.3	4.9	4.5	2.7	2.8	4.5	6.3	4.2
CSE Market Capitalisation (CY£ bn)	1.42	2.00	14.67	8.30	5.58	4.37	4.44	4.50

Source: CyStat, Eurostat

Table 3 – Sample Selection

Year	Total	Investment companies¹¹⁰	Overseas companies	Placements¹¹¹	Sample
1997	5	3	0	0	2
1998	6	1	0	0	5
1999	12	3	1	1	7
2000	64	21	0	7	36
2001	27	2	0	5	20
2002	10	0	0	1	9
TOTAL	124	30	1	14	79

¹¹⁰ Includes both closed-ended investment companies which are regulated and private-equity type companies. Three companies in this category raised over €1 billion in total in 1999-2000 and engaged as shareholders over 50% of the economically active population.

¹¹¹ In a placement, shares are not offered to the public at large via an offering, but rather shares which have already been offered to a number of investors through private placement and are then listed (placed) in the Cyprus Stock Exchange.

Table 4 – IPOs per industrial sector

Industrial sector	Number of IPOs	% of total
Building Materials and Construction Companies	8	10.1
Financial Services	6	7.6
Fish Culture	3	3.8
Hotels	3	3.8
Information Technology	3	3.8
Insurance Companies	4	5.1
Manufacturing companies	13	16.5
Other Companies	21	26.6
Tourism Companies	6	7.6
Trading Companies	12	15.2
TOTAL	79	100

Table 5 – Initial price performance by year of issuance

Year	Number	RAW RETURNS			ADJUSTED RETURNS		
		Mean	Median	Standard Deviation	Mean	Median	Standard Deviation
P A N E L A : F I R S T D A Y I N I T I A L R E T U R N S							
1997	2	9.25%	9.25%	22.07%	8.33%	8.33%	22.31%
1998	4	18.43%	20.18%	45.37%	17.94%	22.03%	48.40%
1999	8	558.63%	580.38%	313.89%	555.33%	557.56%	322.88%
2000	37	149.16%	70.41%	225.80%	158.17%	76.92%	223.94%
2001	20	-1.56%	-1.32%	29.92%	2.21%	-0.16%	29.73%
2002	9	-9.33%	-12.54%	15.02%	-6.99%	-8.75%	18.66%
1997-2002	79	124.25%	17.86%	242.31%	129.20%	24.10%	241.87%
1999	8	558.63%	580.38%	313.89%	555.33%	557.56%	322.88%
1997-2002 (excl. 1999)	71	75.30%	16.47%	177.71%	81.18%	18.97%	177.96%
P A N E L B : F I F T H D A Y R E T U R N S							
1997	2	10.23%	10.23%	23.45%	9.71%	9.71%	25.18%
1998	4	16.01%	16.96%	45.96%	15.64%	20.82%	48.81%
1999	8	548.08%	477.96%	345.45%	543.77%	451.13%	352.56%
2000	36	139.63%	91.59%	192.58%	150.87%	104.21%	190.85%
2001	20	0.82%	-3.07%	33.42%	3.89%	-2.79%	34.67%
2002	9	-18.49%	-25.87%	18.35%	-13.21%	-20.00%	17.33%
1997-2002	79	118.30%	19.46%	231.16%	124.33%	30.25%	230.51%
1999	8	548.08%	477.96%	345.45%	543.77%	451.13%	352.56%
1997-2002 (excl. 1999)	71	69.88%	15.25%	155.31%	69.88%	15.25%	155.31%
P A N E L C : 3 0 T H D A Y R E T U R N S							
1997	2	5.45%	5.45%	23.31%	0.64%	0.64%	21.03%
1998	4	23.04%	29.64%	46.27%	21.28%	32.57%	50.47%
1999	8	589.94%	529.32%	348.07%	551.04%	545.26%	360.62%
2000	36	123.29%	73.14%	209.32%	144.83%	96.60%	205.19%
2001	20	-3.43%	-8.31%	33.00%	3.73%	2.37%	36.30%
2002	9	-39.09%	-41.47%	22.35%	-27.90%	-30.03%	22.92%
1997-2002	79	111.91%	17.05%	247.33%	120.66%	25.61%	239.24%
1999	8	589.94%	529.32%	348.07%	551.04%	545.26%	360.62%
1997-2002 (excl. 1999)	71	58.04%	7.27%	164.29%	72.17%	21.55%	164.99%
P A N E L D : 6 0 T H D A Y R E T U R N S							
1997	2	26.91%	26.91%	12.28%	18.33%	18.33%	1.51%
1998	4	34.55%	46.22%	42.50%	18.66%	29.13%	54.87%
1999	8	704.69%	627.60%	679.69%	633.10%	456.44%	580.18%
2000	36	88.18%	64.57%	178.21%	119.58%	90.30%	178.52%
2001	20	-16.98%	-14.06%	31.37%	1.33%	1.92%	31.61%
2002	9	-35.57%	-45.13%	23.07%	-19.59%	-28.33%	21.45%
1997-2002	79	105.62%	14.45%	315.59%	118.12%	39.22%	280.30%
1999	8	704.69%	627.60%	679.69%	633.10%	456.44%	580.18%
1997-2002 (excl. 1999)	71	38.12%	10.59%	138.37%	60.09%	31.78%	141.98%
P A N E L E : 9 0 T H D A Y R E T U R N S							
1997	2	37.54%	37.54%	12.42%	28.56%	28.56%	22.46%
1998	4	42.82%	55.98%	58.38%	21.93%	40.34%	74.34%
1999	8	457.65%	484.77%	278.94%	393.79%	350.02%	313.13%
2000	36	71.11%	24.54%	201.50%	110.60%	68.07%	198.77%
2001	20	-27.53%	-25.36%	30.05%	-1.28%	1.66%	28.70%
2002	9	-34.86%	-42.54%	23.87%	-20.79%	-30.50%	27.29%
1997-2002	79	70.93%	10.03%	211.66%	89.42%	37.19%	201.42%
1999	8	457.65%	484.77%	278.94%	393.79%	350.02%	313.13%
1997-2002 (excl. 1999)	71	27.35%	0.96%	152.05%	55.12%	34.51%	153.70%

Table 6a – 12-, 24-, and 36-month CARs

<i>Year</i>	<i>Number</i>	<i>Mean</i>	<i>Median</i>	<i>Standard Deviation</i>
P A N E L A : 1 2 - M O N T H C A R s				
1997	2	21.80%	21.80%	31.49%
1998	3	-25.70%	-34.60%	49.72%
1999	8	-15.76%	-7.67%	70.29%
2000	36	25.70%	27.98%	39.49%
2001	20	-2.57%	-0.39%	44.46%
2002	9	-3.77%	-15.88%	62.01%
1997-2002	78	8.72%	14.23%	49.20%
1997-2002 (excl. 1999)	70	11.52%	14.23%	46.08%
P A N E L B : 2 4 - M O N T H C A R s				
1997	2	-7.68%	-7.68%	59.54%
1998	3	-20.97%	-16.06%	11.23%
1999	8	-31.99%	-27.51%	70.11%
2000	36	-2.19%	-15.94%	63.00%
2001	20	-36.02%	-21.75%	63.00%
2002	9	-26.92%	-5.24%	86.75%
1997-2002	78	-17.64%	-18.19%	65.54%
1997-2002 (excl. 1999)	70	-16.00%	-17.50%	65.33%
P A N E L A : 3 6 - M O N T H C A R s				
1997	2	-26.55%	-26.55%	20.55%
1998	3	-35.92%	-37.21%	17.28%
1999	8	-33.77%	-46.69%	121.68%
2000	36	-12.18%	-7.77%	78.04%
2001	20	-47.45%	-33.60%	74.65%
2002	9	-19.48%	-11.07%	63.49%
1997-2002	78	-25.57%	-24.99%	78.39%
1997-2002 (excl. 1999)	70	-24.63%	-24.82%	73.12%

Table 6b – 12-, 24-, and 36-month BHARs

<i>Year</i>	<i>Number</i>	<i>Mean</i>	<i>Median</i>	<i>Standard Deviation</i>
<i>P A N E L A : 1 2 - M O N T H B H A R s</i>				
1997	2	28.39%	28.39%	40.99%
1998	3	-86.01%	-88.69%	15.91%
1999	8	-46.89%	-23.13%	75.15%
2000	36	11.30%	8.66%	21.91%
2001	20	-3.93%	-5.30%	25.88%
2002	9	-9.51%	-24.37%	49.47%
1997-2002	78	-4.28%	-0.73%	42.11%
1997-2002 (excl. 1999)	70	0.59%	1.50%	34.22%
<i>P A N E L B : 2 4 - M O N T H B H A R s</i>				
1997	2	-293.86%	-293.86%	77.27%
1998	3	-137.89%	-107.02%	160.14%
1999	8	-34.41%	-19.41%	51.22%
2000	36	1.10%	-5.29%	23.16%
2001	20	-18.92%	-20.59%	24.93%
2002	9	-19.43%	-27.55%	52.22%
1997-2002	78	-22.96%	-12.62%	66.13%
1997-2002 (excl. 1999)	70	-21.65%	-12.62%	67.80%
<i>P A N E L C : 3 6 - M O N T H B H A R s</i>				
1997	2	-259.74%	-259.74%	58.87%
1998	3	-79.57%	-87.57%	67.01%
1999	8	-28.02%	-17.11%	42.97%
2000	36	1.25%	-6.57%	25.99%
2001	20	-23.57%	-25.81%	18.61%
2002	9	-60.70%	-59.84%	29.83%
1997-2002	78	-25.07%	-15.30%	53.24%
1997-2002 (excl. 1999)	70	-24.73%	-15.30%	54.54%

Table 6c – 3-monthly, 6-monthly, 9-monthly-, and 12-monthly CARs

<i>Year</i>	<i>Number</i>	<i>Mean</i>	<i>Median</i>	<i>Standard Deviation</i>
P A N E L A : 3 - M O N T H C A R s				
1997	2	5.56%	5.56%	26.08%
1998	3	6.79%	1.58%	13.79%
1999	8	12.06%	11.05%	43.22%
2000	36	9.21%	11.98%	24.16%
2001	20	0.74%	3.83%	27.87%
2002	9	-11.36%	-17.56%	31.98%
1997-2002	78	4.77%	6.92%	28.22%
1997-2002 (excl. 1999)	70	3.94%	6.92%	26.31%
P A N E L B : 6 - M O N T H C A R s				
1997	2	10.40%	10.40%	28.04%
1998	3	6.71%	17.21%	24.57%
1999	8	-8.58%	0.27%	55.72%
2000	36	16.06%	16.84%	34.08%
2001	20	-5.98%	-15.51%	34.75%
2002	9	-8.68%	-23.76%	50.72%
1997-2002	78	4.52%	8.66%	39.14%
1997-2002 (excl. 1999)	70	6.02%	9.20%	37.04%
P A N E L A : 9 - M O N T H C A R s				
1997	2	14.95%	14.95%	23.46%
1998	3	-34.09%	-49.27%	65.20%
1999	8	-9.42%	-8.47%	61.30%
2000	36	25.69%	22.82%	38.61%
2001	20	3.96%	18.14%	30.96%
2002	9	-0.45%	2.62%	77.29%
1997-2002	78	10.93%	20.75%	47.39%
1997-2002 (excl. 1999)	70	13.25%	21.78%	45.52%
P A N E L A : 12 - M O N T H C A R s				
1997	2	21.80%	21.80%	31.49%
1998	3	-25.70%	-34.60%	49.72%
1999	8	-15.76%	-7.67%	70.29%
2000	36	25.70%	27.98%	39.49%
2001	19	-2.57%	-0.39%	44.46%
2002	6	-3.77%	-15.88%	62.01%
1997-2002	74	8.72%	14.23%	49.20%
1997-2002 (excl. 1999)	66	11.52%	14.23%	46.08%

Table 6d – 3-monthly, 6-monthly, 9-monthly- and 12-monthly BHARs

<i>Year</i>	<i>Number</i>	<i>Mean</i>	<i>Median</i>	<i>Standard Deviation</i>
P A N E L A : 3 - M O N T H B A H R s				
1997	2	5.52%	5.52%	27.13%
1998	3	6.47%	1.86%	14.09%
1999	8	-7.78%	8.97%	69.31%
2000	36	6.24%	5.47%	20.93%
2001	20	3.02%	3.41%	24.00%
2002	9	-13.97%	-21.71%	31.48%
1997-2002	78	1.63%	2.89%	30.74%
1997-2002 (excl. 1999)	70	2.71%	2.52%	23.58%
P A N E L B : 6 - M O N T H B A H R s				
1997	2	12.33%	12.33%	31.06%
1998	3	4.06%	19.27%	28.27%
1999	8	-34.64%	-15.89%	90.56%
2000	36	12.28%	9.92%	26.33%
2001	20	-3.37%	-10.92%	25.98%
2002	9	-6.17%	-24.49%	63.02%
1997-2002	78	1.01%	3.83%	43.35%
1997-2002 (excl. 1999)	70	5.09%	5.28%	33.18%
P A N E L A : 9 - M O N T H B A H R s				
1997	2	16.85%	16.85%	26.23%
1998	3	-72.44%	-70.39%	132.91%
1999	8	-28.55%	-12.55%	93.69%
2000	36	16.56%	8.59%	26.89%
2001	20	1.37%	2.68%	22.94%
2002	9	3.80%	-15.09%	78.45%
1997-2002	78	3.15%	5.32%	52.73%
1997-2002 (excl. 1999)	70	6.77%	5.55%	45.63%
P A N E L A : 12 - M O N T H B A H R s				
1997	2	28.39%	28.39%	40.99%
1998	3	-86.01%	-88.69%	15.91%
1999	8	-46.89%	-23.13%	75.15%
2000	36	11.30%	8.66%	21.91%
2001	19	-3.93%	-5.30%	25.88%
2002	6	-9.51%	-24.37%	49.47%
1997-2002	74	-4.28%	-0.73%	42.11%
1997-2002 (excl. 1999)	66	0.59%	1.50%	34.22%

Table 7 – Variable expected signs in regression models

Variable description	Variable Category	Expected sign	
		Initial raw returns	Long term returns
UND	Advisor/issue-certifier	(-)	(+)
AUD	Advisor/issue-certifier	(-)	(+)
LNTAL	Market and Institutional	(-)	(-)
STDRTNS	Market and Institutional	(+)	(-)
LNAGE	Issuer specific	(-)	(+)
ONWER	Issuer specific	(-)	(+)
LEVER	Issuer specific	(+)	(+)
ROE	Issuer specific	(-)	(+)
LNPBT	Issuer specific	(-)	(+)
SGROWTH	Issuer specific	(+)	(-)
LNGRP	IPO Specific	(-)	(+)
PROJ	IPO Specific	(-)	(+)
OFPR	IPO Specific	(-)	(-)
UNDPRT	IPO Specific	(-)	(+)
ICOSTS	IPO Specific	(+)	(-)

TABLE 8 – Descriptive Statistics for Variables in Regression Model for First Day raw Returns

	LNAGE	AUD	LNGPR	OWNER	LNTAL	UND	LEVER	STDRTNS	UNDPRT	PROJ	OFPR	ICOSTS	ROE	LNPBT	SGROWTH
Mean	2.746	0.570	15.122	0.657	5.581	0.494	0.886	0.191	0.785	0.557	1.062	0.065	0.379	13.003	0.818
Median	2.708	1.000	15.093	0.683	5.529	0.000	0.644	0.083	1.000	1.000	0.854	0.054	0.228	13.183	0.251
Maximum	4.043	1.000	18.526	0.750	6.924	1.000	3.589	1.382	1.000	1.000	5.126	0.450	7.339	16.096	24.843
Minimum	1.609	0.000	10.915	0.380	3.989	0.000	0.000	0.000	0.000	0.000	0.308	0.013	0.000	0.136	0.006
Std. Dev.	0.585	0.498	1.283	0.069	0.613	0.503	0.927	0.256	0.414	0.500	0.685	0.057	0.829	1.935	2.884
Skewness	0.081	-0.281	-0.221	-2.124	-0.027	0.025	1.594	2.738	-1.386	-0.229	3.845	4.158	7.630	-3.757	7.563
Kurtosis	2.301	1.079	3.780	8.456	3.067	1.001	5.035	10.872	2.921	1.053	20.126	27.610	64.411	25.857	62.723
Jarque-Bera	1.696	13.187	2.647	157.411	0.025	13.167	47.091	302.702	25.317	13.176	1.160.118	2.221.191	13.180.640	1.905.591	12.493.990
Probability	0.428	0.001	0.266	0.000	0.988	0.001	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000
Sum	216.968	45.000	1.194.630	51.919	440.870	39.000	69.986	15.087	62.000	44.000	83.926	5.096	29.907	1.027.201	64.659
Sum Sq. Dev.	26.705	19.367	128.395	0.369	29.345	19.747	67.038	5.122	13.342	19.494	36.572	0.254	53.666	292.084	648.733
Observations	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79

LNAGE is the natural logarithm of the age of the IPO firm calculated in days from the day of incorporation to the day of listing. AUD is a dichotomous variable that takes the value of 1 if the auditor in the IPO is one of the Big Five. LNGRP is the natural logarithm of the total Gross Proceeds of the issue. OWNER is the percentage holding of shares that the initial owners retain in the company. LNTAL is the natural logarithm of the time period between application and actual listing. UND is a dichotomous variable that takes the value of 1 if the underwriter is one of three prestigious underwriters and 0 if not. LEVER is the ratio of bank debt to shareholders' funds. STDRTNS is the standard deviation of market adjusted returns during the first 21 days of listing. UNDPRT is a dichotomous variable that takes the value of 1 if the underwriter participates in the capital of the IPO company prior to its listing in the CSE. PROJ is a dichotomous variable that takes the value of 1 if in the prospectus there are earnings forecasts and 0 if not. OFPR is the offering price of the IPO expressed in Euro. ICOSTS is the variable denoting the total direct costs (expressed as a percentage of the total funds raised) incurred for listing. ROE is the return of equity of the IPO firm as calculated by the audited profits after tax of the year before listing and the shareholders' funds (net assets). LNPBT is the natural logarithm of the average pre-tax profits (or losses) for the last three years before the firm's listing. SGROWTH is the sales growth exhibited by the IPO firm the year before the listing (T) and the year before (T-1).

Table 9 – Selected descriptive statistics

Statistic	Region/Country¹¹²	Mean	Median
First day return (raw) (%)	Cyprus	124.2	17.9
	Greece	50.8	23.9
	Europe	22.1	6.4
	USA	16.9	n.a
	China	247.0	n.a
First day return (adjusted) %	Cyprus	129.2	24.1
	Greece	46.5	23.5
	Europe	22.0	6.5
	USA	n.a.	n.a.
	China	n.a.	n.a.
Time between application and listing (days)	Cyprus	319	242
	Greece	n.a	n.a.
	Europe ¹¹³	1 to 90	n.a.
	USA ¹¹⁴	1 to 85	n.a.
	China	305	34

¹¹² For first day returns we use data as follows: for Greece we use data from Gotzageorgis (2004), for Europe we use data from Gajewski and Gresse (2006), for the USA we use data from Loughran, Ritter and Rydqvist (2011) and Bouis R., (2006) and for China we use data from Tian and Megginson (2005). For time between application and listing we use data for Europe and the USA from Chowdhry and Sherman (1996).

¹¹³ Depending on the country and the method of allocation (i.e., discretionary or non-discretionary).

¹¹⁴ Depending on the method of underwriting (i.e., best efforts Vs firm commitment)

Table 10 – Selected descriptive statistics

Time period	Number of IPOs	Mean raw initial return %	Mean adjusted initial return %	Standard deviation of raw initial returns %
PANEL A				
1997	2	9.25	8.33	22.07
1998	4	18.43	17.94	45.37
1999	8	558.63	555.33	313.89
2000	36	149.16	158.17	225.80
2001	20	-1.56	2.21	29.92
2002	9	-9.33	-6.99	15.02
PANEL B				
Gross Proceeds (Euro m)	Number of IPOs	Mean raw initial return %	Mean adjusted initial return %	Standard deviation of raw initial returns %
GP < 1,0	12	51,42	53,63	148,70
1,0<GP<3,0	21	178,99	183,24	328,48
3,0<GP<10,0	30	126,80	134,09	219,10
GP>10	16	102,24	105,76	208,49
PANEL C				
Age of IPO	Number of IPOs	Mean raw initial return %	Mean adjusted initial return %	Standard deviation of raw initial returns %
AGE<8	13	231.01	236.86	368.69
8<AGE<18	38	144.95	150.40	255.53
18<AGE<35	19	53.76	60.23	93.89
AGE>35	9	31.44	29.76	68.55

Table 11 – Descriptive statistics by industrial sector

Industrial sector	Number of IPOs	Mean age of firms in sector	Mean raw initial return %	Mean adjusted initial return %	Standard deviation of raw initial returns %
Building Materials and Construction Companies	8	19.8	-11.14	-0.98	14.1
Financial Services	6	7.3	126.76	137.23	355.1
Fish Culture	3	9.3	597.49	605.20	280.3
Hotels	3	13.0	-23.93	-10.07	20.9
Information Technology	3	7.3	428.34	433.34	543.1
Insurance Companies	4	26.3	5.01	7.84	37.9
Manufacturing companies	13	28.3	96.02	96.75	106.1
Other Companies	21	14.0	111.94	113.08	214.4
Tourism Companies	6	18.5	17.71	24.62	33.6
Trading Companies	12	18.2	165.82	172.37	202.8

TABLE 12 - Correlation table

	ADRAW	LNAGE	AUD	LNGPR	OWNER	LNTAL	UND	LEVER	STDRTNS	UNDPRT	PROJ	OFPR	ICOSTS	ROE	LNPBT	SGROWTH
ADRAW	1.000 ----- -----															
LNAGE	-0.255 -2.312 0.024	1.000 ----- -----														
AUD	0.067 0.586 0.560	0.026 0.230 0.819	1.000 ----- -----													
LNGPR	-0.031 -0.273 0.786	0.086 0.762 0.449	0.145 1.284 0.203	1.000 ----- -----												
OWNER	-0.018 -0.154 0.878	0.263 2.392 0.019	-0.078 -0.685 0.495	-0.041 -0.358 0.721	1.000 ----- -----											
LNTAL	-0.543 -5.677 0.000	0.016 0.137 0.891	-0.119 -1.048 0.298	-0.365 -3.436 0.001	-0.116 -1.023 0.310	1.000 ----- -----										
UND	-0.178 -1.583 0.118	0.195 1.742 0.086	0.296 2.717 0.008	0.279 2.546 0.013	0.204 1.833 0.071	-0.023 -0.200 0.842	1.000 ----- -----									
LEVER	-0.026 -0.228 0.820	0.093 0.820 0.415	0.081 0.709 0.480	0.047 0.411 0.682	0.169 1.507 0.136	-0.013 -0.113 0.910	0.038 0.338 0.736	1.000 ----- -----								
STDRTNS	0.891 17.180 0.000	-0.277 -2.525 0.014	0.134 1.185 0.240	-0.039 -0.341 0.734	-0.049 -0.433 0.666	-0.390 -3.712 0.000	-0.139 -1.233 0.221	-0.119 -1.049 0.298	1.000 ----- -----							

UNDPRT	0.015	-0.021	0.043	0.046	0.085	0.016	0.147	-0.173	0.049	1.000						
	0.127	-0.184	0.373	0.402	0.745	0.140	1.308	-1.539	0.431	----						
	0.899	0.854	0.710	0.689	0.459	0.889	0.195	0.128	0.668	----						
PROJ	-0.027	0.145	-0.003	0.063	-0.127	-0.204	-0.139	0.104	-0.030	-0.219	1.000					
	-0.240	1.288	-0.029	0.555	-1.128	-1.829	-1.229	0.921	-0.263	-1.969	----					
	0.811	0.202	0.977	0.580	0.263	0.071	0.223	0.360	0.794	0.053	----					
OFPR	0.057	-0.321	0.130	0.248	-0.525	-0.074	-0.127	-0.069	0.051	-0.229	-0.027	1.000				
	0.500	-2.974	1.146	2.244	-5.411	-0.654	-1.123	-0.609	0.446	-2.062	-0.238	----				
	0.619	0.004	0.255	0.028	0.000	0.515	0.265	0.545	0.657	0.043	0.813	----				
ICOSTS	-0.024	-0.055	0.066	-0.525	0.018	0.233	-0.119	0.061	-0.023	-0.002	0.009	-0.224	1.000			
	-0.208	-0.483	0.580	-5.411	0.155	2.098	-1.050	0.538	-0.199	-0.017	0.079	-2.014	----			
	0.836	0.630	0.563	0.000	0.878	0.039	0.297	0.592	0.843	0.986	0.937	0.048	----			
ROE	0.106	-0.097	0.123	0.018	-0.022	-0.076	0.109	0.299	0.023	-0.205	0.071	-0.010	-0.005	1.000		
	0.938	-0.852	1.085	0.156	-0.192	-0.672	0.965	2.747	0.200	-1.840	0.621	-0.091	-0.044	----		
	0.351	0.397	0.281	0.876	0.848	0.503	0.338	0.008	0.842	0.070	0.537	0.927	0.965	----		
LNPBT	-0.059	0.049	-0.006	0.289	0.042	0.147	0.091	-0.323	-0.021	0.319	-0.242	0.059	-0.168	-0.088	1.000	
	-0.518	0.435	-0.051	2.652	0.366	1.305	0.802	-2.998	-0.181	2.958	-2.189	0.515	-1.499	-0.771	----	
	0.606	0.665	0.959	0.010	0.716	0.196	0.425	0.004	0.857	0.004	0.032	0.608	0.138	0.443	----	
SGROWTH	-0.034	-0.195	0.067	0.284	-0.108	0.022	0.027	-0.039	0.012	0.012	-0.071	0.204	-0.133	0.056	0.116	1.000
	-0.298	-1.748	0.593	2.599	-0.954	0.191	0.234	-0.347	0.109	0.109	-0.621	1.825	-1.182	0.494	1.029	----
	0.767	0.085	0.555	0.011	0.343	0.849	0.816	0.730	0.913	0.914	0.537	0.072	0.241	0.623	0.307	----

TABLE 13 - Covariance coefficients

Covariance Analysis: Ordinary

Included observations: 79

Balanced sample (listwise missing value deletion)

	ADRAW	LNAGE	AUD	LNGPR	OWNER	LNTAL	UND	LEVER	STDRTNS	UNDPRT	PROJ	OFPR	ICOSTS	ROE	LNPBT	SGROWTH
ADRAW	5.797 ----- -----															
LNAGE	-0.357 -2.312 0.024	0.338 ----- -----														
AUD	0.079 0.586 0.560	0.008 0.230 0.819	0.245 ----- -----													
LNGPR	-0.095 -0.273 0.786	0.064 0.762 0.449	0.091 1.284 0.203	1.625 ----- -----												
OWNER	-0.003 -0.154 0.878	0.010 2.392 0.019	-0.003 -0.685 0.495	-0.004 -0.358 0.721	0.005 ----- -----											
LNTAL	-0.797 -5.677 0.000	0.006 0.137 0.891	-0.036 -1.048 0.298	-0.283 -3.436 0.001	-0.005 -1.023 0.310	0.371 ----- -----										
UND	-0.214 -1.583 0.118	0.057 1.742 0.086	0.073 2.717 0.008	0.178 2.546 0.013	0.007 1.833 0.071	-0.007 -0.200 0.842	0.250 ----- -----									
LEVER	-0.057 -0.224 0.823	0.050 0.831 0.409	0.037 0.715 0.477	0.055 0.413 0.681	0.011 1.519 0.133	-0.008 -0.117 0.907	0.018 0.343 0.732	0.850 ----- -----								

STDRTNS	0.546	-0.041	0.017	-0.013	-0.001	-0.060	-0.018	-0.028	0.065							
	17.180	-2.525	1.185	-0.341	-0.433	-3.712	-1.233	-1.045	-----							
	0.000	0.014	0.240	0.734	0.666	0.000	0.221	0.299	-----							
UNDPRT	0.014	-0.005	0.009	0.024	0.002	0.004	0.030	-0.065	0.005	0.169						
	0.127	-0.184	0.373	0.402	0.745	0.140	1.308	-1.527	0.431	-----						
	0.899	0.854	0.710	0.689	0.459	0.889	0.195	0.131	0.668	-----						
PROJ	-0.033	0.042	-0.001	0.040	-0.004	-0.062	-0.034	0.048	-0.004	-0.045	0.247					
	-0.240	1.288	-0.029	0.555	-1.128	-1.829	-1.229	0.926	-0.263	-1.969	-----					
	0.811	0.202	0.977	0.580	0.263	0.071	0.223	0.357	0.794	0.053	-----					
OFPR	0.093	-0.127	0.044	0.215	-0.024	-0.031	-0.043	-0.044	0.009	-0.064	-0.009	0.463				
	0.500	-2.974	1.146	2.244	-5.411	-0.654	-1.123	-0.614	0.446	-2.062	-0.238	-----				
	0.619	0.004	0.255	0.028	0.000	0.515	0.265	0.541	0.657	0.043	0.813	-----				
ICOSTS	-0.003	-0.002	0.002	-0.038	0.000	0.008	-0.003	0.003	0.000	0.000	0.000	-0.009	0.003			
	-0.208	-0.483	0.580	-5.411	0.155	2.098	-1.050	0.536	-0.199	-0.017	0.079	-2.014	-----			
	0.836	0.630	0.563	0.000	0.878	0.039	0.297	0.594	0.843	0.986	0.937	0.048	-----			
ROE	0.211	-0.046	0.050	0.019	-0.001	-0.038	0.045	0.227	0.005	-0.069	0.029	-0.006	0.000	0.679		
	0.938	-0.852	1.085	0.156	-0.192	-0.672	0.965	2.743	0.200	-1.840	0.621	-0.091	-0.044	-----		
	0.351	0.397	0.281	0.876	0.848	0.503	0.338	0.008	0.842	0.070	0.537	0.927	0.965	-----		
LNPBT	-0.273	0.055	-0.006	0.709	0.005	0.172	0.087	-0.571	-0.010	0.252	-0.231	0.077	-0.018	-0.139	3.697	
	-0.518	0.435	-0.051	2.652	0.366	1.305	0.802	-2.988	-0.181	2.958	-2.189	0.515	-1.499	-0.771	-----	
	0.606	0.665	0.959	0.010	0.716	0.196	0.425	0.004	0.857	0.004	0.032	0.608	0.138	0.443	-----	
SGROWTH	-0.234	-0.325	0.096	1.037	-0.021	0.038	0.038	-0.105	0.009	0.015	-0.100	0.397	-0.022	0.133	0.642	8.212
	-0.298	-1.748	0.593	2.599	-0.954	0.191	0.234	-0.348	0.109	0.109	-0.621	1.825	-1.182	0.494	1.029	-----
	0.767	0.085	0.555	0.011	0.343	0.849	0.816	0.729	0.913	0.914	0.537	0.072	0.241	0.623	0.307	-----

Table 14 – CARs and gross proceeds

	Number	Raw Initial Returns	Adjusted Initial Returns	CAR12	CAR24	CAR36
P A N E L A						
Average						
0<GP<1.000.000	12	51.42%	53.63%	41.79%	(96.78%)	(81.97%)
1.000.000<GP<3.000.000	20	189.87%	194.66%	11.93%	3.41%	(11.83%)
3.000.000<GP<10.000.000	30	126.80%	134.09%	4.34%	(24.10%)	(27.13%)
10.000.000<GP<+	16	102.24%	105.76%	21.27%	(13.07%)	(29.04%)
TOTAL	78					
P A N E L B						
Median						
0<GP<1.000.000	12	(0.89%)	4.06%	36.15%	(89.42%)	(72.20%)
1.000.000<GP<3.000.000	20	53.02%	49.22%	60.37%	(58.59%)	(33.41%)
3.000.000<GP<10.000.000	30	30.80%	46.47%	12.51%	(17.56%)	(26.44%)
10.000.000<GP<+	16	1.59%	10.05%	38.24%	(4.30%)	(19.66%)
TOTAL	78					
P A N E L C						
Standard Deviation						
0<GP<1.000.000	12	148.70%	151.43%	32.49%	65.80%	69.41%
1.000.000<GP<3.000.000	20	333.10%	334.16%	54.41%	71.48%	82.96%
3.000.000<GP<10.000.000	30	219.10%	220.61%	46.46%	58.55%	84.53%
10.000.000<GP<+	16	208.49%	197.29%	50.68%	63.16%	72.21%
TOTAL	78					

Table 15 – CARs and Age

	Number	Raw Initial Returns	Adjusted Initial Returns	CAR12	CAR24	CAR36
P A N E L A						
Average						
AGE<8	13	231.01%	236.86%	3.23%	(26.60%)	(44.69%)
8<AGE<18	38	144.95%	150.40%	6.85%	(24.25%)	(35.97%)
18<AGE<35	19	53.76%	60.23%	12.48%	(1.38%)	(11.75%)
AGE>35	8	40.21%	39.12%	17.79%	(16.80%)	(22.93%)
TOTAL	78					
P A N E L B						
Median						
AGE<8	13	32.71%	33.34%	24.88%	(17.45%)	(69.35%)
8<AGE<18	38	28.06%	33.28%	6.96%	(27.96%)	(27.36%)
18<AGE<35	19	4.62%	18.14%	12.57%	9.56%	(12.02%)
AGE>35	8	19.05%	15.63%	21.88%	(21.46%)	(17.05%)
TOTAL	78					
P A N E L C						
Standard Deviation						
AGE<8	13	368.69%	371.80%	75.05%	74.50%	122.11%
8<AGE<18	38	255.53%	252.39%	42.01%	69.53%	72.15%
18<AGE<35	19	93.89%	94.20%	41.45%	58.22%	73.14%
AGE>35	8	67.67%	69.92%	34.81%	38.79%	48.55%
TOTAL	78					

TABLE 16a - Correlations for 12-month CARs (CAR12)

Covariance Analysis: Ordinary

Included observations: 78

Balanced sample (listwise missing value deletion)

	CAR12	AUD	OWNER	UND	STDRTNS	LNTAL	LEVER	OFPR	PROJ	LNGPR	UNDPRT	LNAGE	ICOSTS	ROE	LNPBT	SGROWTH
CAR12	1.000															

AUD	0.007	1.000														
	0.057	-----														
	0.955	-----														
OWNER	-0.021	0.109	1.000													
	-0.181	0.954	-----													
	0.857	0.343	-----													
UND	0.143	0.288	-0.003	1.000												
	1.258	2.620	-0.029	-----												
	0.212	0.011	0.977	-----												
STDRTNS	-0.113	0.143	0.005	-0.131	1.000											
	-0.992	1.256	0.040	-1.156	-----											
	0.324	0.213	0.968	0.251	-----											
LNTAL	-0.007	-0.107	0.016	-0.008	-0.405	1.000										
	-0.059	-0.939	0.136	-0.069	-3.856	-----										
	0.953	0.351	0.892	0.945	0.000	-----										
LEVER	0.010	0.052	0.063	0.001	-0.098	0.032	1.000									
	0.088	0.451	0.549	0.009	-0.860	0.281	-----									
	0.931	0.653	0.585	0.993	0.392	0.779	-----									

OFPR	-0.269	0.124	0.135	-0.135	0.056	-0.066	-0.097	1.000								
	-2.438	1.088	1.189	-1.185	0.485	-0.580	-0.849	----								
	0.017	0.280	0.238	0.240	0.629	0.564	0.399	----								
PROJ	0.132	-0.013	-0.015	-0.152	-0.022	-0.193	0.076	-0.034	1.000							
	1.162	-0.116	-0.130	-1.341	-0.194	-1.719	0.666	-0.296	----							
	0.249	0.908	0.897	0.184	0.847	0.090	0.508	0.768	----							
LNGPR	0.197	0.153	0.145	0.289	-0.044	-0.377	0.073	0.253	0.070	1.000						
	1.752	1.345	1.279	2.630	-0.386	-3.553	0.642	2.284	0.615	----						
	0.084	0.183	0.205	0.010	0.701	0.001	0.523	0.025	0.540	----						
UNDPRT	0.133	0.066	-0.067	0.178	0.033	-0.013	-0.108	-0.220	-0.203	0.032	1.000					
	1.169	0.574	-0.586	1.573	0.288	-0.112	-0.949	-1.963	-1.807	0.281	----					
	0.246	0.568	0.560	0.120	0.774	0.911	0.346	0.053	0.075	0.779	----					
LNAGE	0.111	0.010	-0.052	0.180	-0.268	0.038	0.043	-0.337	0.131	0.099	0.015	1.000				
	0.973	0.090	-0.458	1.592	-2.427	0.330	0.376	-3.115	1.153	0.866	0.129	----				
	0.334	0.928	0.648	0.116	0.018	0.743	0.708	0.003	0.253	0.389	0.898	----				
ICOSTS	-0.098	0.062	-0.099	-0.125	-0.019	0.241	0.048	-0.228	0.004	-0.523	0.009	-0.064	1.000			
	-0.862	0.539	-0.864	-1.101	-0.166	2.167	0.418	-2.042	0.037	-5.356	0.075	-0.557	----			
	0.391	0.592	0.390	0.275	0.869	0.033	0.677	0.045	0.971	0.000	0.941	0.579	----			
ROE	0.018	0.127	0.100	0.114	0.020	-0.081	0.328	-0.007	0.074	0.016	-0.218	-0.092	-0.003	1.000		
	0.153	1.113	0.876	1.000	0.177	-0.713	3.028	-0.065	0.650	0.137	-1.944	-0.809	-0.030	----		
	0.879	0.269	0.384	0.321	0.860	0.478	0.003	0.949	0.518	0.892	0.056	0.421	0.976	----		
LNPBT	-0.015	0.106	0.158	0.274	-0.123	0.074	-0.115	0.166	-0.255	0.367	0.244	0.269	-0.203	-0.173	1.000	
	-0.130	0.928	1.399	2.487	-1.077	0.646	-1.007	1.466	-2.298	3.435	2.195	2.432	-1.806	-1.529	----	
	0.897	0.357	0.166	0.015	0.285	0.520	0.317	0.147	0.024	0.001	0.031	0.017	0.075	0.130	----	
SGROWTH	0.048	0.070	0.102	0.030	0.010	0.018	-0.032	0.206	-0.068	0.283	0.007	-0.194	-0.132	0.055	0.146	1.000
	0.422	0.616	0.894	0.262	0.090	0.160	-0.281	1.835	-0.596	2.571	0.057	-1.720	-1.164	0.483	1.290	----

TABLE 16b - Correlations for 24-month CARs

Covariance Analysis: Ordinary

Included observations:

78

Balanced sample (listwise missing value deletion)

	CAR24	AUD	OWNER	UND	STDR TNS	LNTAL	LEVER	OFPR	PROJ	LNGPR	UNDPRT	LNAGE	ICOSTS	ROE	LNPBT	SGRO WTH
CAR24	1.000 ----- -----															
AUD	0.101 0.883 0.380	1.000 ----- -----														
OWNER	-0.134 -1.183 0.241	0.109 0.954 0.343	1.000 ----- -----													
UND	0.219 1.955 0.054	0.288 2.620 0.011	-0.003 -0.029 0.977	1.000 ----- -----												
STDR TNS	-0.137 -1.205 0.232	0.143 1.256 0.213	0.005 0.040 0.968	-0.131 -1.156 0.251	1.000 ----- -----											
LNTAL	-0.083 -0.726 0.470	-0.107 -0.939 0.351	0.016 0.136 0.892	-0.008 -0.069 0.945	-0.405 -3.856 0.000	1.000 ----- -----										
LEVER	0.034 0.294 0.769	0.052 0.451 0.653	0.063 0.549 0.585	0.001 0.009 0.993	-0.098 -0.860 0.392	0.032 0.281 0.779	1.000 ----- -----									

OFPR	-0.344	0.124	0.135	-0.135	0.056	-0.066	-0.097	1.000								
	-3.198	1.088	1.189	-1.185	0.485	-0.580	-0.849	----								
	0.002	0.280	0.238	0.240	0.629	0.564	0.399	----								
PROJ	-0.011	-0.013	-0.015	-0.152	-0.022	-0.193	0.076	-0.034	1.000							
	-0.096	-0.116	-0.130	-1.341	-0.194	-1.719	0.666	-0.296	----							
	0.924	0.908	0.897	0.184	0.847	0.090	0.508	0.768	----							
LNGPR	0.125	0.153	0.145	0.289	-0.044	-0.377	0.073	0.253	0.070	1.000						
	1.098	1.345	1.279	2.630	-0.386	-3.553	0.642	2.284	0.615	----						
	0.276	0.183	0.205	0.010	0.701	0.001	0.523	0.025	0.540	----						
UNDPRT	0.318	0.066	-0.067	0.178	0.033	-0.013	-0.108	-0.220	-0.203	0.032	1.000					
	2.922	0.574	-0.586	1.573	0.288	-0.112	-0.949	-1.963	-1.807	0.281	----					
	0.005	0.568	0.560	0.120	0.774	0.911	0.346	0.053	0.075	0.779	----					
LNAGE	0.137	0.010	-0.052	0.180	-0.268	0.038	0.043	-0.337	0.131	0.099	0.015	1.000				
	1.204	0.090	-0.458	1.592	-2.427	0.330	0.376	-3.115	1.153	0.866	0.129	----				
	0.232	0.928	0.648	0.116	0.018	0.743	0.708	0.003	0.253	0.389	0.898	----				
ICOSTS	-0.115	0.062	-0.099	-0.125	-0.019	0.241	0.048	-0.228	0.004	-0.523	0.009	-0.064	1.000			
	-1.010	0.539	-0.864	-1.101	-0.166	2.167	0.418	-2.042	0.037	-5.356	0.075	-0.557	----			
	0.316	0.592	0.390	0.275	0.869	0.033	0.677	0.045	0.971	0.000	0.941	0.579	----			
ROE	0.017	0.127	0.100	0.114	0.020	-0.082	0.328	-0.007	0.074	0.016	-0.218	-0.092	-0.003	1.000		
	0.151	1.112	0.875	0.999	0.177	-0.713	3.027	-0.065	0.651	0.136	-1.943	-0.810	-0.030	----		
	0.880	0.270	0.384	0.321	0.860	0.478	0.003	0.948	0.517	0.892	0.056	0.421	0.976	----		
LNPBT	0.078	0.106	0.158	0.274	-0.123	0.074	-0.115	0.166	-0.255	0.367	0.244	0.269	-0.203	-0.173	1.000	
	0.678	0.928	1.399	2.487	-1.077	0.646	-1.007	1.466	-2.298	3.435	2.195	2.432	-1.806	-1.532	----	
	0.500	0.357	0.166	0.015	0.285	0.520	0.317	0.147	0.024	0.001	0.031	0.017	0.075	0.130	----	
SGROWT H	-0.043	0.070	0.102	0.030	0.010	0.018	-0.032	0.206	-0.068	0.283	0.007	-0.194	-0.132	0.055	0.146	1.000
	-0.373	0.616	0.894	0.262	0.090	0.160	-0.281	1.835	-0.596	2.571	0.057	-1.720	-1.164	0.483	1.290	----

TABLE 16c - Correlations for 36-month CARs

Covariance Analysis: Ordinary

Included observations: 78

Balanced sample (listwise missing value deletion)

	CAR24	AUD	OWNER	UND	STDRTNS	LNTAL	LEVER	OFPR	PROJ	LNGPR	UNDPRT	LNAGE	ICOSTS	ROE	LNPBT	SGROWTH
CAR24	1.000															

AUD	0.101	1.000														
	0.883	----														
	0.380	----														
OWNER	-0.134	0.109	1.000													
	-1.183	0.954	----													
	0.241	0.343	----													
UND	0.219	0.288	-0.003	1.000												
	1.955	2.620	-0.029	----												
	0.054	0.011	0.977	----												
STDRTNS	-0.137	0.143	0.005	-0.131	1.000											
	-1.205	1.256	0.040	-1.156	----											
	0.232	0.213	0.968	0.251	----											
LNTAL	-0.083	-0.107	0.016	-0.008	-0.405	1.000										
	-0.726	-0.939	0.136	-0.069	-3.856	----										
	0.470	0.351	0.892	0.945	0.000	----										
LEVER	0.034	0.052	0.063	0.001	-0.098	0.032	1.000									
	0.294	0.451	0.549	0.009	-0.860	0.281	----									
	0.769	0.653	0.585	0.993	0.392	0.779	----									

OFPR	-0.344	0.124	0.135	-0.135	0.056	-0.066	-0.097	1.000								
	-3.198	1.088	1.189	-1.185	0.485	-0.580	-0.849	-----								
	0.002	0.280	0.238	0.240	0.629	0.564	0.399	-----								
PROJ	-0.011	-0.013	-0.015	-0.152	-0.022	-0.193	0.076	-0.034	1.000							
	-0.096	-0.116	-0.130	-1.341	-0.194	-1.719	0.666	-0.296	-----							
	0.924	0.908	0.897	0.184	0.847	0.090	0.508	0.768	-----							
LNGPR	0.125	0.153	0.145	0.289	-0.044	-0.377	0.073	0.253	0.070	1.000						
	1.098	1.345	1.279	2.630	-0.386	-3.553	0.642	2.284	0.615	-----						
	0.276	0.183	0.205	0.010	0.701	0.001	0.523	0.025	0.540	-----						
UNDPRT	0.318	0.066	-0.067	0.178	0.033	-0.013	-0.108	-0.220	-0.203	0.032	1.000					
	2.922	0.574	-0.586	1.573	0.288	-0.112	-0.949	-1.963	-1.807	0.281	-----					
	0.005	0.568	0.560	0.120	0.774	0.911	0.346	0.053	0.075	0.779	-----					
LNAGE	0.137	0.010	-0.052	0.180	-0.268	0.038	0.043	-0.337	0.131	0.099	0.015	1.000				
	1.204	0.090	-0.458	1.592	-2.427	0.330	0.376	-3.115	1.153	0.866	0.129	-----				
	0.232	0.928	0.648	0.116	0.018	0.743	0.708	0.003	0.253	0.389	0.898	-----				
ICOSTS	-0.115	0.062	-0.099	-0.125	-0.019	0.241	0.048	-0.228	0.004	-0.523	0.009	-0.064	1.000			
	-1.010	0.539	-0.864	-1.101	-0.166	2.167	0.418	-2.042	0.037	-5.356	0.075	-0.557	-----			
	0.316	0.592	0.390	0.275	0.869	0.033	0.677	0.045	0.971	0.000	0.941	0.579	-----			
ROE	0.017	0.127	0.100	0.114	0.020	-0.082	0.328	-0.007	0.074	0.016	-0.218	-0.092	-0.003	1.000		
	0.151	1.112	0.875	0.999	0.177	-0.713	3.027	-0.065	0.651	0.136	-1.943	-0.810	-0.030	-----		
	0.880	0.270	0.384	0.321	0.860	0.478	0.003	0.948	0.517	0.892	0.056	0.421	0.976	-----		
LNPBT	0.078	0.106	0.158	0.274	-0.123	0.074	-0.115	0.166	-0.255	0.367	0.244	0.269	-0.203	-0.173	1.000	
	0.678	0.928	1.399	2.487	-1.077	0.646	-1.007	1.466	-2.298	3.435	2.195	2.432	-1.806	-1.532	-----	
	0.499	0.356	0.165	0.015	0.284	0.520	0.3169	0.146	0.0243	0.001	0.031	0.017	0.074	0.129	-----	
SGROWTH	-0.042	0.070	0.102	0.030	0.010	0.018	-0.032	0.205	-0.068	0.282	0.006	-0.193	-0.132	0.055	0.146	1.000
	-0.373	0.615	0.894	0.261	0.090	0.159	-0.281	1.834	-0.595	2.571	0.057	-1.719	-1.164	0.482	1.289	-----

TABLE 17a - Covariance Coefficients for CAR12

	CAR12	AUD	OWNER	UND	STDRTNS	LNTAL	LEVER	OFPR	PROJ	LNGPR	UNDPRT	LNAGE	ICOSTS	ROE	LNPBT	SGROWTH
CAR12	0.220 ----- -----															
AUD	0.002 0.057 0.955	0.246 ----- -----														
OWNER	-0.001 -0.181 0.857	0.004 0.954 0.343	0.005 ----- -----													
UND	0.033 1.258 0.212	0.071 2.620 0.011	0.000 -0.029 0.977	0.250 ----- -----												
STDRTNS	-0.014 -0.992 0.324	0.018 1.256 0.213	0.000 0.040 0.968	-0.017 -1.156 0.251	0.065 ----- -----											
LNTAL	-0.002 -0.059 0.953	-0.032 -0.939 0.351	0.001 0.136 0.892	-0.002 -0.069 0.945	-0.063 -3.856 0.000	0.370 ----- -----										
LEVER	0.004 0.081 0.936	0.022 0.445 0.658	0.004 0.553 0.582	0.000 0.003 0.997	-0.022 -0.863 0.391	0.017 0.286 0.776	0.765 ----- -----									
OFPR	-0.086 -2.438 0.017	0.042 1.088 0.280	0.006 1.189 0.238	-0.046 -1.185 0.240	0.010 0.485 0.629	-0.028 -0.580 0.564	-0.058 -0.843 0.402	0.468 ----- -----								

PROJ	0.031	-0.003	-0.001	-0.038	-0.003	-0.059	0.033	-0.012	0.247							
	1.162	-0.116	-0.130	-1.341	-0.194	-1.719	0.659	-0.296	-----							
	0.249	0.908	0.897	0.184	0.847	0.090	0.512	0.768	-----							
LNGPR	0.118	0.097	0.013	0.185	-0.014	-0.294	0.082	0.222	0.045	1.639						
	1.752	1.345	1.279	2.630	-0.386	-3.553	0.641	2.284	0.615	-----						
	0.084	0.183	0.205	0.010	0.701	0.001	0.524	0.025	0.540	-----						
UNDPRT	0.025	0.013	-0.002	0.036	0.003	-0.003	-0.039	-0.061	-0.041	0.017	0.163					
	1.169	0.574	-0.586	1.573	0.288	-0.112	-0.961	-1.963	-1.807	0.281	-----					
	0.246	0.568	0.560	0.120	0.774	0.911	0.339	0.053	0.075	0.779	-----					
LNAGE	0.030	0.003	-0.002	0.052	-0.040	0.013	0.021	-0.133	0.038	0.073	0.003	0.333				
	0.973	0.090	-0.458	1.592	-2.427	0.330	0.365	-3.115	1.153	0.866	0.129	-----				
	0.334	0.928	0.648	0.116	0.018	0.743	0.716	0.003	0.253	0.389	0.898	-----				
ICOSTS	-0.003	0.002	0.000	-0.004	0.000	0.008	0.002	-0.009	0.000	-0.038	0.000	-0.002	0.003			
	-0.862	0.539	-0.864	-1.101	-0.166	2.167	0.420	-2.042	0.037	-5.356	0.075	-0.557	-----			
	0.391	0.592	0.390	0.275	0.869	0.033	0.676	0.045	0.971	0.000	0.941	0.579	-----			
ROE	0.007	0.052	0.006	0.047	0.004	-0.041	0.238	-0.004	0.031	0.017	-0.073	-0.044	0.000	0.687		
	0.153	1.113	0.876	1.000	0.177	-0.713	3.034	-0.065	0.650	0.137	-1.944	-0.809	-0.030	-----		
	0.879	0.269	0.384	0.321	0.860	0.478	0.003	0.949	0.518	0.892	0.056	0.421	0.976	-----		
LNPBT	-0.009	0.066	0.014	0.173	-0.040	0.057	-0.128	0.143	-0.160	0.593	0.125	0.196	-0.015	-0.181	1.595	
	-0.130	0.928	1.399	2.487	-1.077	0.646	-1.020	1.466	-2.298	3.435	2.195	2.432	-1.806	-1.529	-----	
	0.897	0.357	0.166	0.015	0.285	0.520	0.311	0.147	0.024	0.001	0.031	0.017	0.075	0.130	-----	
SGROWTH	0.065	0.101	0.020	0.043	0.008	0.032	-0.081	0.406	-0.098	1.044	0.008	-0.322	-0.022	0.132	0.533	8.311
	0.422	0.616	0.894	0.262	0.090	0.160	-0.280	1.835	-0.596	2.571	0.057	-1.720	-1.164	0.483	1.290	-----
	0.674	0.540	0.374	0.794	0.928	0.874	0.780	0.070	0.553	0.012	0.955	0.090	0.248	0.631	0.201	-----

TABLE 17b - Covariance Coefficients for CAR24

	CAR24	AUD	OWNER	UND	STDRTNS	LNTAL	LEVER	OFPR	PROJ	LNGPR	UNDPRT	LNAGE	ICOSTS	ROE	LNPBT	SGROWTH
CAR24	0.416 ----- -----															
AUD	0.032 0.883 0.380	0.246 ----- -----														
OWNER	-0.006 -1.183 0.241	0.004 0.954 0.343	0.005 ----- -----													
UND	0.071 1.955 0.054	0.071 2.620 0.011	0.000 -0.029 0.977	0.250 ----- -----												
STDRTNS	-0.023 -1.205 0.232	0.018 1.256 0.213	0.000 0.040 0.968	-0.017 -1.156 0.251	0.065 ----- -----											
LNTAL	-0.033 -0.726 0.470	-0.032 -0.939 0.351	0.001 0.136 0.892	-0.002 -0.069 0.945	-0.063 -3.856 0.000	0.370 ----- -----										
LEVER	0.019 0.294 0.769	0.022 0.451 0.653	0.004 0.549 0.585	0.000 0.009 0.993	-0.022 -0.860 0.392	0.017 0.281 0.779	0.766 ----- -----									
OFPR	-0.152 -3.198 0.002	0.042 1.088 0.280	0.006 1.189 0.238	-0.046 -1.185 0.240	0.010 0.485 0.629	-0.028 -0.580 0.564	-0.058 -0.849 0.399	0.468 ----- -----								

PROJ	-0.004	-0.003	-0.001	-0.038	-0.003	-0.059	0.033	-0.012	0.247							
	-0.096	-0.116	-0.130	-1.341	-0.194	-1.719	0.666	-0.296	----							
	0.924	0.908	0.897	0.184	0.847	0.090	0.508	0.768	----							
LNGPR	0.103	0.097	0.013	0.185	-0.014	-0.294	0.082	0.222	0.045	1.639						
	1.098	1.345	1.279	2.630	-0.386	-3.553	0.642	2.284	0.615	----						
	0.276	0.183	0.205	0.010	0.701	0.001	0.523	0.025	0.540	----						
UNDPRT	0.083	0.013	-0.002	0.036	0.003	-0.003	-0.038	-0.061	-0.041	0.017	0.163					
	2.922	0.574	-0.586	1.573	0.288	-0.112	-0.949	-1.963	-1.807	0.281	----					
	0.005	0.568	0.560	0.120	0.774	0.911	0.346	0.053	0.075	0.779	----					
LNAGE	0.051	0.003	-0.002	0.052	-0.040	0.013	0.022	-0.133	0.038	0.073	0.003	0.333				
	1.204	0.090	-0.458	1.592	-2.427	0.330	0.376	-3.115	1.153	0.866	0.129	----				
	0.232	0.928	0.648	0.116	0.018	0.743	0.708	0.003	0.253	0.389	0.898	----				
ICOSTS	-0.004	0.002	0.000	-0.004	0.000	0.008	0.002	-0.009	0.000	-0.038	0.000	-0.002	0.003			
	-1.010	0.539	-0.864	-1.101	-0.166	2.167	0.418	-2.042	0.037	-5.356	0.075	-0.557	----			
	0.316	0.592	0.390	0.275	0.869	0.033	0.677	0.045	0.971	0.000	0.941	0.579	----			
ROE	0.009	0.052	0.006	0.047	0.004	-0.041	0.238	-0.004	0.031	0.017	-0.073	-0.044	0.000	0.687		
	0.151	1.112	0.875	0.999	0.177	-0.713	3.027	-0.065	0.651	0.136	-1.943	-0.810	-0.030	----		
	0.880	0.270	0.384	0.321	0.860	0.478	0.003	0.948	0.517	0.892	0.056	0.421	0.976	----		
LNPBT	0.063	0.066	0.014	0.173	-0.040	0.057	-0.127	0.143	-0.160	0.593	0.125	0.196	-0.015	-0.181	1.595	
	0.678	0.928	1.399	2.487	-1.077	0.646	-1.007	1.466	-2.298	3.435	2.195	2.432	-1.806	-1.532	----	
	0.500	0.357	0.166	0.015	0.285	0.520	0.317	0.147	0.024	0.001	0.031	0.017	0.075	0.130	----	
SGROWTH	-0.080	0.101	0.020	0.043	0.008	0.032	-0.081	0.406	-0.098	1.044	0.008	-0.322	-0.022	0.132	0.533	8.311
	-0.373	0.616	0.894	0.262	0.090	0.160	-0.281	1.835	-0.596	2.571	0.057	-1.720	-1.164	0.483	1.290	----
	0.710	0.540	0.374	0.794	0.928	0.874	0.780	0.070	0.553	0.012	0.955	0.090	0.248	0.631	0.201	----

TABLE 17c - Covariance Coefficients for CAR36

	CAR36	AUD	OWNER	UND	STDRTNS	LNTAL	LEVER	OFPR	PROJ	LNGPR	UNDPRT	LNAGE	ICOSTS	ROE	LNPBT	SGROWTH
	0.635															

AUD	0.009	0.246														
	0.200	----														
	0.842	----														
OWNER	-0.009	0.004	0.005													
	-1.474	0.954	----													
	0.145	0.343	----													
UND	0.067	0.071	0.000	0.250												
	1.490	2.620	-0.029	----												
	0.140	0.011	0.977	----												
STDRTNS	-0.032	0.018	0.000	-0.017	0.065											
	-1.377	1.256	0.040	-1.156	----											
	0.173	0.213	0.968	0.251	----											
LNTAL	-0.070	-0.032	0.001	-0.002	-0.063	0.370										
	-1.273	-0.939	0.136	-0.069	-3.856	----										
	0.207	0.351	0.892	0.945	0.000	----										
LEVER	0.074	0.022	0.004	0.000	-0.022	0.017	0.766									
	0.925	0.451	0.549	0.009	-0.860	0.281	----									
	0.358	0.653	0.585	0.993	0.392	0.779	----									
OFPR	-0.185	0.042	0.006	-0.046	0.010	-0.028	-0.058	0.468								
	-3.143	1.088	1.189	-1.185	0.485	-0.580	-0.849	----								
	0.002	0.280	0.238	0.240	0.629	0.564	0.399	----								
PROJ	-0.003	-0.003	-0.001	-0.038	-0.003	-0.059	0.033	-0.012	0.247							
	-0.065	-0.116	-0.130	-1.341	-0.194	-1.719	0.666	-0.296	----							

	0.949	0.908	0.897	0.184	0.847	0.090	0.508	0.768	-----							
LNGPR	0.108	0.097	0.013	0.185	-0.014	-0.294	0.082	0.222	0.045	1.639						
	0.926	1.345	1.279	2.630	-0.386	-3.553	0.642	2.284	0.615	-----						
	0.358	0.183	0.205	0.010	0.701	0.001	0.523	0.025	0.540	-----						
UNDPRT	0.061	0.013	-0.002	0.036	0.003	-0.003	-0.038	-0.061	-0.041	0.017	0.163					
	1.687	0.574	-0.586	1.573	0.288	-0.112	-0.949	-1.963	-1.807	0.281	-----					
	0.096	0.568	0.560	0.120	0.774	0.911	0.346	0.053	0.075	0.779	-----					
LNAGE	0.062	0.003	-0.002	0.052	-0.040	0.013	0.022	-0.133	0.038	0.073	0.003	0.333				
	1.192	0.090	-0.458	1.592	-2.427	0.330	0.376	-3.115	1.153	0.866	0.129	-----				
	0.237	0.928	0.648	0.116	0.018	0.743	0.708	0.003	0.253	0.389	0.898	-----				
ICOSTS	-0.006	0.002	0.000	-0.004	0.000	0.008	0.002	-0.009	0.000	-0.038	0.000	-0.002	0.003			
	-1.216	0.539	-0.864	-1.101	-0.166	2.167	0.418	-2.042	0.037	-5.356	0.075	-0.557	-----			
	0.228	0.592	0.390	0.275	0.869	0.033	0.677	0.045	0.971	0.000	0.941	0.579	-----			
ROE	0.099	0.052	0.006	0.047	0.004	-0.041	0.238	-0.004	0.031	0.017	-0.073	-0.044	0.000	0.687		
	1.323	1.113	0.876	1.000	0.177	-0.713	3.028	-0.065	0.650	0.137	-1.944	-0.809	-0.030	-----		
	0.190	0.269	0.384	0.321	0.860	0.478	0.003	0.949	0.518	0.892	0.056	0.421	0.976	-----		
LNPBT	0.018	0.066	0.014	0.173	-0.040	0.057	-0.127	0.143	-0.160	0.593	0.125	0.196	-0.015	-0.181	1.595	
	0.154	0.928	1.399	2.487	-1.077	0.646	-1.007	1.466	-2.298	3.435	2.195	2.432	-1.806	-1.529	-----	
	0.878	0.357	0.166	0.015	0.285	0.520	0.317	0.147	0.024	0.001	0.031	0.017	0.075	0.130	-----	
SGROWTH	-0.458	0.101	0.020	0.043	0.008	0.032	-0.081	0.406	-0.098	1.044	0.008	-0.322	-0.022	0.132	0.533	8.311
	-1.772	0.616	0.894	0.262	0.090	0.160	-0.281	1.835	-0.596	2.571	0.057	-1.720	-1.164	0.483	1.290	-----
	0.080	0.540	0.374	0.794	0.928	0.874	0.780	0.070	0.553	0.012	0.955	0.090	0.248	0.631	0.201	-----

TABLE 18 - REGRESSION RESULTS FOR INITIAL RETURNS				
Dependent Variable: ADRAW				
Method: Least Squares				
Included observations: 79				
<i>White heteroskedasticity-consistent standard errors & covariance</i>				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNAGE	-0.004	0.214	-0.020	0.984
AUD	-0.318	0.217	-1.464	0.148
LNGPR	-0.186	0.093	-2.004	0.049
OWNER	-1.315	1.889	-0.696	0.489
LNTAL	-1.231	0.310	-3.970	0.000
UND	-0.208	0.247	-0.843	0.402
LEVER	0.223	0.099	2.263	0.027
STDRTNS	7.320	0.949	7.714	0.000
UNDPRT	-0.038	0.240	-0.160	0.874
PROJ	-0.360	0.274	-1.315	0.193
OFPR	0.035	0.152	0.227	0.821
ICOSTS	0.841	2.079	0.405	0.687
ROE	0.185	0.102	1.817	0.074
LNPBT	0.073	0.064	1.147	0.256
SGROWTH	-0.016	0.018	-0.898	0.373
C	9.612	3.192	3.011	0.004
R-squared	0.870			
Adjusted R-squared	0.839			
S.E. of regression	0.973			
Sum squared resid	59.670			
Log likelihood	-101.012			
F-statistic	28.036			
Prob(F-statistic)	0.000			
Mean dependent var	1.242			
S.D. dependent var	2.423			
Akaike info criterion	2.962			
Schwarz criterion	3.442			
Hannan-Quinn criter.	3.155			
Durbin-Watson stat	1.300			

TABLE 19 - Variance Inflation Factors (VIFs)			
Variance Inflation Factors			
Included observations: 79			
	Coefficient	Uncentered	Centered
Variable	Variance	VIF	VIF
LNAGE	0.046	71.810	2.282
AUD	0.047	4.349	1.607
LNGPR	0.009	394.537	3.484
OWNER	3.567	296.432	2.766
LNTAL	0.096	624.913	3.365
UND	0.061	4.950	2.191
LEVER	0.010	3.762	1.585
STDRTNS	0.900	3.433	1.804
UNDPRT	0.058	9.188	2.067
PROJ	0.075	6.695	2.362
OFPR	0.023	8.766	2.643
ICOSTS	4.322	4.782	1.803
ROE	0.010	2.166	1.794
LNPBT	0.004	141.274	2.612
SGROWTH	0.000	2.763	2.566
C	10.190	1970.861	N.A.
Mean			2.329

TABLE 20a - REGRESSION RESULTS FOR CAR12				
Dependent Variable: CAR12				
Method: Least Squares				
Included observations: 78				
<i>White heteroskedasticity-consistent standard errors & covariance</i>				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
AUD	0.025	0.130	0.194	0.847
OWNER	-0.075	0.860	-0.087	0.931
UND	0.017	0.137	0.123	0.903
STDRTNS	-0.125	0.254	-0.495	0.623
LNTAL	0.089	0.128	0.696	0.489
LEVER	-0.038	0.067	-0.562	0.576
OFPR	-0.230	0.107	-2.150	0.036**
PROJ	0.123	0.128	0.959	0.341
LNGPR	0.112	0.050	2.262	0.027**
UNDPRT	0.111	0.141	0.790	0.433
LNAGE	-0.037	0.118	-0.313	0.755
ICOSTS	-0.494	0.755	-0.654	0.515
ROE	0.017	0.041	0.402	0.689
LNPBT	-0.034	0.052	-0.655	0.515
SGROWTH	0.005	0.010	0.486	0.628
C	-1.361	1.415	-0.962	0.340
R-squared	0.194			
Adjusted R-squared	-0.001			
S.E. of regression	0.472			
Sum squared resid	13.826			
Log likelihood	-43.201			
F-statistic	0.995			
Prob(F-statistic)	0.471			
Mean dependent var	0.090			
S.D. dependent var	0.472			
Akaike info criterion	1.518			
Schwarz criterion	2.001			
Hannan-Quinn criter.	1.712			
Durbin-Watson stat	2.008			

TABLE 20b - REGRESSION RESULTS FOR CAR24				
Dependent Variable: CAR24				
Method: Least Squares				
Included observations: 78				
<i>White heteroskedasticity-consistent standard errors & covariance</i>				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
AUD	0.197	0.179	1.099	0.276
OWNER	-1.149	0.833	-1.379	0.173
UND	0.022	0.184	0.120	0.905
STDRTNS	-0.500	0.235	-2.127	0.037**
LNTAL	-0.099	0.158	-0.625	0.534
LEVER	-0.001	0.096	-0.013	0.990
OFPR	-0.356	0.122	-2.908	0.005*
PROJ	0.020	0.171	0.119	0.906
LNGPR	0.035	0.076	0.462	0.646
UNDPRT	0.355	0.223	1.593	0.116
LNAGE	-0.098	0.136	-0.718	0.475
ICOSTS	-1.885	1.060	-1.778	0.080***
ROE	0.039	0.054	0.720	0.474
LNPBT	0.025	0.081	0.306	0.761
SGROWTH	-0.006	0.012	-0.550	0.585
C	0.704	1.725	0.408	0.685
R-squared	0.292			
Adjusted R-squared	0.121			
S.E. of regression	0.609			
Sum squared resid	22.984			
Log likelihood	-63.023			
F-statistic	1.706			
Prob(F-statistic)	0.073***			
Mean dependent var	-0.183			
S.D. dependent var	0.649			
Akaike info criterion	2.026			
Schwarz criterion	2.510			
Hannan-Quinn criter.	2.220			
Durbin-Watson stat	1.971			

TABLE 20c - REGRESSION RESULTS FOR CAR36				
Dependent Variable: CAR36				
Method: Least Squares				
Included observations: 78				
<i>White heteroskedasticity-consistent standard errors & covariance</i>				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
AUD	0.139	0.205	0.679	0.500
OWNER	-1.858	1.839	-1.011	0.316
UND	-0.046	0.208	-0.224	0.824
STDRTNS	-0.766	0.285	-2.688	0.009*
LNTAL	-0.224	0.204	-1.098	0.276
LEVER	0.022	0.081	0.267	0.791
OFPR	-0.435	0.139	-3.126	0.003*
PROJ	-0.064	0.209	-0.308	0.760
LNGPR	0.049	0.082	0.599	0.551
UNDPRT	0.238	0.237	1.001	0.321
LNAGE	-0.155	0.169	-0.916	0.363
ICOSTS	-2.664	1.040	-2.561	0.013**
ROE	0.172	0.085	2.033	0.046**
LNPBT	0.046	0.090	0.509	0.613
SGROWTH	-0.055	0.013	-4.366	0.000*
C	1.785	2.620	0.681	0.498
R-squared	0.326			
Adjusted R-squared	0.163			
S.E. of regression	0.734			
Sum squared resid	33.361			
Log likelihood	-77.553			
F-statistic	2.002			
Prob(F-statistic)	0.029**			
Mean dependent var	-0.302			
S.D. dependent var	0.802			
Akaike info criterion	2.399			
Schwarz criterion	2.882			
Hannan-Quinn criter.	2.592			
Durbin-Watson stat	1.868			

TABLE 21a - Variance Inflation Factors for CAR12			
<i>Variance Inflation Factors</i>			
<i>Included observations: 78</i>			
	Coefficient	Uncentered	Centered
Variable	Variance	VIF	VIF
AUD	0.017	7.559	2.397
OWNER	0.741	249.574	1.309
UND	0.019	8.784	2.926
STDRTNS	0.064	2.665	1.938
LNTAL	0.016	381.323	1.784
LEVER	0.005	8.275	4.045
OFPR	0.011	11.183	2.058
PROJ	0.016	5.623	2.796
LNGPR	0.002	435.691	3.777
UNDPRT	0.020	10.230	2.505
LNAGE	0.014	76.361	2.802
ICOSTS	0.570	3.183	1.824
ROE	0.002	7.844	5.712
LNPBT	0.003	350.665	4.619
SGROWTH	0.000	4.231	3.187
C	2.004	1,467.772	N.A.
Mean			2.912

TABLE 21b - Variance Inflation Factors for CAR24			
<i>Variance Inflation Factors</i>			
<i>Included observations: 78</i>			
	Coefficient	Uncentered	Centered
Variable	Variance	VIF	VIF
AUD	0.032	9.573	3.564
OWNER	0.694	131.720	1.857
UND	0.034	8.069	2.640
STDRTNS	0.055	2.978	1.936
LNTAL	0.025	333.255	2.317
LEVER	0.009	10.845	5.867
OFPR	0.015	13.047	3.465
PROJ	0.029	6.760	2.309
LNGPR	0.006	601.038	4.680
UNDPRT	0.050	13.288	4.295
LNAGE	0.018	57.705	3.507
ICOSTS	1.124	3.856	2.114
ROE	0.003	12.792	9.622
LNPBT	0.006	461.539	6.406
SGROWTH	0.000	3.102	2.524
C	2.975	1,285.821	N.A.
Mean			3.807

TABLE 21c - Variance Inflation Factors for CAR36			
<i>Variance Inflation Factors</i>			
<i>Included observations: 78</i>			
	Coefficient	Uncentered	Centered
Variable	Variance	VIF	VIF
AUD	0.042	8.201	2.467
OWNER	3.381	411.275	2.192
UND	0.043	6.368	2.414
STDRTNS	0.081	3.402	2.023
LNTAL	0.042	361.299	2.505
LEVER	0.007	3.430	1.779
OFPR	0.019	10.769	2.542
PROJ	0.044	5.602	2.093
LNGPR	0.007	450.688	6.144
UNDPRT	0.056	10.964	2.117
LNAGE	0.029	59.309	3.099
ICOSTS	1.082	4.422	2.762
ROE	0.007	3.034	2.401
LNPBT	0.008	393.362	4.022
SGROWTH	0.000	4.869	3.594
Mean			2.810

Table 22 – Sample selection

<i>Year</i>	<i>Total sample¹¹⁵</i>	<i>Financial services companies¹¹⁶</i>	<i>Restructuring</i>	<i>Changed accounting year-end</i>	<i>Lack of data</i>	<i>IPO date at t₁</i>	<i>Final Sample</i>
1997	2	1	1	0	0	0	0
1998	4	1	1	0	0	0	2
1999	8	1	0	1	0	0	6
2000	36	2	6	1	1	1	26
2001	20	4	0	0	0	6	16
2002	9	0	0	0	0	6	9
TOTAL	79	9	8	2	1	13	46

Source: CSE Fact books 1997-2002, Author analysis

¹¹⁵ This is the sample employed in Chapter 1 of this thesis and it has already been adjusted to exclude closed-ended and private equity investment companies, overseas companies and placements.

¹¹⁶ Includes financial services companies and insurance companies. Investment companies (both closed-ended and private equity-type have already been excluded).

Table 23 – IPOs per industrial sector

<i>Industrial sector</i>	<i>Number of IPOs</i>	<i>% of total sample</i>
Building Materials and Construction	4	8.7
Fish Culture	3	6.5
Hotels	1	2.2
Information Technology	2	4.3
Manufacturing	10	21.7
Other	14	30.4
Tourism	4	8.8
Trading	8	17.4
TOTAL	46	100

Source: CSE Fact books 1997-2002, Author analysis

Table 24 – Variable expected signs in regression models

This table presents the expected signs of the coefficients of the independent variables in the regression equation:

$$R_{jt} = \beta_o + \beta_1 AUD_{jt} + \beta_2 UND_{jt} + \beta_3 LNTAL_{jt} + \beta_4 STDRTNS_{jt} + \beta_5 LEVER_{jt} + \beta_6 LNGPR_{jt} + \beta_7 OFPR_{jt} + \beta_8 CF + \beta_9 EM_{jt-1} + \varepsilon_j$$

PANEL A shows all the independent variables except for the Earnings Management variable (EM) that is shown in PANEL B. The EM variable takes the form of either (DA), or (TACCR) or (CRED, REC, INVENT and DEP) in the regression. CF is cash flow from operations at t_{-1} and is a control variable.

<i>Coefficient</i>	<i>Sign for Initial Raw</i>		<i>Sign for Long term</i>
	<i>Returns (ADRAW)</i>		<i>returns (CARs)</i>
<i>PANEL A – Independent variables</i>			
<i>AUD</i>	-		+
<i>UND</i>	-		+
<i>LNTAL</i>	-		-
<i>STDRTNS</i>	+		-
<i>LEVER</i>	+		+
<i>LNGPR</i>	-		+
<i>OFPR</i>	-		-
<i>PANEL B – Earnings Management variables</i>			
	<i>If $\Delta y > \Delta x$</i>	<i>If $\Delta y < \Delta x$</i>	
<i>DA</i>	+	-	-
<i>TACCR</i>	+	-	-
<i>CRED</i>	+	-	-
<i>INVENT</i>	-	+	+
<i>REC</i>	-	+	+
<i>DEP</i>	-	+	+
<i>CF</i>	-	+	+

TABLE 25a - Descriptive statistics of variables employed in univariate tests (absolute numbers)

The table below shows descriptive statistical data for the 46 firms in the sample with annual financial statements hand-picked from their prospectuses at t-3, t-2, t-1, t0, t1, and t2. Total Accruals are calculated as: $TACCR_{j,t} = NI_{j,t} - CFO_{j,t}$ where, $TACCR_{j,t}$ is the managed component of earnings for IPO sample firm j during period t, which is equal to total accruals. $NI_{j,t}$ is the reported net income before extraordinary items for IPO sample firm j during period t, $CFO_{j,t}$ is the cash flow from operations for IPO sample firm j during period t, TA is total assets, TANOc is total assets adjusted for cash and cash equivalents. REC are total receivables, CRED are total creditors, INVENT are inventories (stock) and DEP is gross accumulated depreciation. Year t-1 is the benchmark year and is the year of the last audited accounts in the prospectus and year t0 is the IPO year. All figures are in Euro.

	NI	CFO	SALES	TA	TANOc	TACCR	REC	INVENT	CRED	DEP
PANEL A - YEAR t₃										
Mean	269,466	1,181,960	10,581,828	10,669,872	10,200,648	-912,494	2,053,240	1,100,093	2,167,074	1,907,959
Median	165,351	405,084	5,390,554	3,413,055	3,231,499	-194,948	903,691	293,316	723,837	561,905
PANEL B - YEAR t-2										
Mean	508,832	748,211	12,879,570	12,509,704	11,861,270	-239,380	2,323,806	1,373,567	2,342,332	2,288,865
Median	311,496	275,047	5,610,614	4,293,906	3,383,205	-54,838	1,151,318	429,911	946,688	748,426
PANEL C - YEAR t₋₁ (benchmark year)										
Mean	1,289,711	790,110	15,540,293	16,770,163	15,856,861	499,601	3,013,112	1,726,711	2,891,222	2,030,845
Median	808,000	413,500	7,166,299	6,360,133	5,813,655	255,910	1,711,577	600,524	1,314,404	842,267
PANEL D - YEAR t₀ (IPO year)										
Mean	1,755,163	895,057	19,684,133	33,740,651	26,834,840	860,106	5,129,998	2,926,416	3,773,572	3,267,895
Median	1,008,605	306,823	10,248,124	13,310,322	10,943,875	476,183	2,294,656	1,227,260	1,570,005	1,032,755
PANEL E - YEAR t₁										
Mean	1,170,784	967,797	30,689,709	48,120,465	44,389,974	202,987	6,649,475	4,135,771	4,946,230	4,963,742
Median	795,023	72,151	15,698,014	15,994,723	14,003,667	200,270	3,421,505	2,092,001	1,922,003	1,571,621
PANEL F - YEAR t₂										
Mean	522,756	2,799,233	34,733,657	46,937,530	43,769,857	-2,276,477	7,106,072	4,095,063	5,740,186	4,473,424
Median	267,182	518,705	19,313,349	16,456,379	14,437,807	-565,498	3,065,660	2,242,187	2,187,432	2,014,613

TABLE 25b - Descriptive statistics of variables employed in univariate tests (deflated)

The table below shows descriptive statistical data for the 46 firms in the sample with annual financial statements hand-picked from their prospectuses at t-3, t-2, t-1, t₀, t₁, and t₂. The variables are deflated by Sales, Total Assets and Total Assets Net of Cash. Total Accruals are calculated as: $TACCR_{j,t} = NI_{j,t} - CFO_{j,t}$ where, $TACCR_{j,t}$ is the managed component of earnings for IPO sample firm j during period t, which is equal to total accruals. $NI_{j,t}$ is the reported net income before extraordinary items for IPO sample firm j during period t, $CFO_{j,t}$ is the cash flow from operations for IPO sample firm j during period t, TA is total assets, $TANoC$ is total assets adjusted for cash and cash equivalents. REC are total receivables, CRED are total creditors, INVENT are inventories (stock) and DEP is gross accumulated depreciation. Year t-1 is the benchmark year and is the year of the last audited accounts in the prospectus and year t₀ is the IPO year. All figures are in Euro.

PART A - DEFLATED BY SALES

	NI	CFO	TACCR	REC	INVENT	CRED	DEP
PANEL A - YEAR t₃							
Mean	2.55%	11.17%	-8.62%	19.40%	10.40%	20.48%	18.03%
Median	3.07%	7.51%	-3.62%	16.76%	5.44%	13.43%	10.42%
PANEL B - YEAR t-2							
Mean	3.95%	5.81%	-1.86%	18.04%	10.66%	18.19%	17.77%
Median	5.55%	4.90%	-9.98%	20.52%	7.66%	16.87%	13.34%
PANEL C - YEAR t₁ (benchmark year)							
Mean	8.30%	5.08%	3.21%	19.39%	11.11%	18.60%	13.07%
Median	11.27%	5.77%	3.57%	23.88%	8.38%	18.34%	11.75%
PANEL D - YEAR t₀ (IPO year)							
Mean	8.92%	4.55%	4.37%	26.06%	14.87%	19.17%	16.60%
Median	9.84%	2.99%	4.65%	22.39%	11.98%	15.32%	10.08%
PANEL E - YEAR t₁							
Mean	3.81%	3.15%	0.66%	21.67%	13.48%	16.12%	16.17%
Median	5.06%	0.46%	1.28%	21.80%	13.33%	12.24%	10.01%
PANEL F - YEAR t₂							
Mean	1.51%	8.06%	-6.55%	20.46%	11.79%	16.53%	12.88%
Median	1.38%	2.69%	-2.93%	15.87%	11.61%	11.33%	10.43%

PART B - DEFLATED BY TOTAL ASSETS

	NI	CFO	TACCR	REC	INVENT	CRED	DEP
PANEL A - YEAR t₃							
Mean	2.53%	11.08%	-8.55%	19.24%	10.31%	20.31%	17.88%
Median	4.84%	11.87%	-5.71%	26.48%	8.59%	21.21%	16.46%
PANEL B - YEAR t-2							
Mean	4.07%	5.98%	-1.91%	18.58%	10.98%	18.72%	18.30%
Median	7.25%	6.41%	-1.28%	26.81%	10.01%	22.05%	17.43%
PANEL C - YEAR t₁ (benchmark year)							
Mean	7.69%	4.71%	2.98%	17.97%	10.30%	17.24%	12.11%
Median	12.70%	6.50%	4.02%	26.91%	9.44%	20.67%	13.24%
PANEL D - YEAR t₀ (IPO year)							
Mean	5.20%	2.65%	2.55%	15.20%	8.67%	11.18%	9.69%
Median	7.58%	2.31%	3.58%	17.24%	9.22%	11.80%	7.76%
PANEL E - YEAR t₁							
Mean	2.43%	2.01%	0.42%	13.82%	8.59%	10.28%	10.32%
Median	4.97%	0.45%	1.25%	21.39%	13.08%	12.02%	9.83%
PANEL F - YEAR t₂							
Mean	1.11%	5.96%	-4.85%	15.14%	8.72%	12.23%	9.53%
Median	1.62%	3.15%	-3.44%	18.63%	13.63%	13.29%	12.24%

PART C - DEFLATED BY TOTAL ASSETS NET of CASH

	NI	CFO	TACCR	REC	INVENT	CRED	DEP
PANEL A - YEAR t_3							
Mean	2.64%	11.59%	-8.95%	20.13%	10.78%	21.24%	18.70%
Median	5.12%	12.54%	-6.03%	27.97%	9.08%	22.40%	17.39%
PANEL B - YEAR t_2							
Mean	4.29%	6.31%	-2.02%	19.59%	11.58%	19.75%	19.30%
Median	9.21%	8.13%	-1.62%	34.03%	10.33%	27.98%	22.12%
PANEL C - YEAR t_1 (benhcmark year)							
Mean	8.13%	4.98%	3.15%	19.00%	10.89%	18.23%	12.81%
Median	13.90%	7.11%	4.40%	29.44%	10.33%	22.61%	14.49%
PANEL D - YEAR t_0 (IPO year)							
Mean	6.54%	3.34%	3.21%	19.12%	10.91%	14.06%	12.18%
Median	9.22%	2.80%	4.35%	20.97%	11.21%	14.35%	9.44%
PANEL E - YEAR t_1							
Mean	2.64%	2.18%	0.46%	14.98%	9.32%	11.14%	11.18%
Median	5.68%	0.52%	1.43%	24.43%	14.94%	13.72%	11.22%
PANEL F - YEAR t_2							
Mean	1.19%	6.40%	-5.20%	16.24%	9.36%	13.11%	10.22%
Median	1.85%	3.59%	-3.92%	15.53%	15.53%	15.15%	13.95%

TABLE 26a - Descriptive statistics

The table below shows descriptive statistics for the data in the sample of 46 firms. The benchmark time is t_{-1} .

DA is the change in discretionary accruals at time t_n adjusted by sales,

TA is the change in total accruals at time t_n adjusted by sales,

NI is net income before extraordinary items at time t_n , adjusted by sales,

CFO is the change in cash flow from operations at time t_n adjusted by sales,

ROS is the change in return on sales at time t_n ,

Winsorization takes place at the 5th and 95th percentile. t_n takes the values of -3, -2, 0, 1, and 2

		Mean	Mean (winsorized)	Median	Standard Deviation	Minimum	Maximum
PANEL A	t_{-3} vs t_{-1}						
DA*		-0.1382	-0.1311	-0.1014	0.2126	-0.9768	0.2892
TA**		-0.1856	-0.1507	-0.1196	0.3916	-2.1571	0.3536
NI		-0.1578	-0.1574	-0.1091	0.1554	-0.6301	0.1115
CFO		0.0279	-0.0026	-0.0407	0.3445	-0.5495	1.5270
ROS		-0.0848	-0.0786	-0.0672	0.0951	-0.4880	0.0799
PANEL B	t_{-2} vs t_{-1}						
DA		-0.0568	-0.0636	-0.0331	0.1960	-0.5584	0.4518
TA		-0.0794	-0.0801	-0.0345	0.2111	-0.6545	0.4181
NI		-0.0865	-0.0821	-0.0553	0.1078	-0.5501	0.1014
CFO		-0.0071	-0.0071	-0.0311	0.1908	-0.5017	0.5590
ROS		-0.0470	-0.0471	-0.0311	0.0642	-0.2514	0.0838
PANEL C	t_0 vs t_{-1}						
DA		-0.0774	0.0175	-0.0094	0.7742	-4.8635	0.8465
TA		-0.0741	0.0187	0.0048	0.7288	-4.6036	0.7280
NI		0.0214	0.0198	0.0189	0.0753	-0.1717	0.2697
CFO		0.0955	0.0046	0.0038	0.7384	-0.5922	4.7544
ROS		-0.0055	-0.0088	-0.0091	0.0732	-0.1753	0.2846
PANEL D	t_1 vs t_{-1}						
DA		0.0572	0.0296	0.0089	0.4417	-0.7122	2.0472
TA		0.0395	0.0229	-0.0053	0.3396	-0.5832	1.6340
NI		-0.0595	-0.0488	-0.0077	0.1962	-0.8910	0.1428
CFO		-0.0989	-0.0965	-0.0266	0.3866	-1.5680	0.6433
ROS		-0.0975	-0.0935	-0.0487	0.1589	-0.5928	0.0813
PANEL E	t_2 vs t_{-1}						
DA		-0.1349	-0.1258	-0.0581	0.2965	-1.2727	0.3444
TA		-0.1126	-0.0609	-0.0609	0.2614	-1.2681	0.3884
NI		-0.1048	-0.0842	-0.0302	0.2623	-1.1486	0.1915
CFO		0.0078	0.0076	0.0105	0.1355	-0.3448	0.3316
ROS		-0.1513	-0.1285	-0.0745	0.2454	-1.1572	0.1016

*Discretionary accruals is the estimate of the change in total accruals that is due to the exercise of accounting discretion by issuers. It is estimated as:

$$\text{Discretionary accruals (DA)} = \frac{\text{Total Accruals}_t - \text{Total Accruals}_{t-1}}{\text{Sales}_t - \text{Sales}_{t-1}}$$

**The change in the other variables shown above (Total Accruals, Net Income, Cash Flow from Operations, Return on Sales, Return on Total Assets and Return on Total Assets net of Cash) between the benchmark period and the test period standardized by sales in the test period is given as:

$$\text{Change in variable} = \frac{\text{Variable}_t - \text{Variable}_{t-1}}{\text{Sales}_t}$$

TABLE 26b - Descriptive statistics

The table below shows descriptive statistics for the data in the sample of 46 firms. The benchmark time is t_{-1} .

DA is the change in discretionary accruals at time t_n adjusted by total assets,

TA is the change in total accruals at time t_n adjusted by total assets,

NI is net income before extraordinary items at time t_n , adjusted by total assets,

CFO is the change in cash flow from operations at time t_n adjusted by total assets,

ROANoC is the change in return on total assets at time t_n ,

Winsorization takes place at the 5th and 95th percentile. t_n takes the values of -3, -2, 0, 1, and 2

		Mean	Mean	Median	Standard	Minimum	Maximum
		(winsorized)			Deviation		
PANEL A	t_{-3} vs t_{-1}						
DA*		-0.1133	-0.1202	-0.1053	0.2026	-0.5589	0.5132
TA**		-0.2732	-0.2429	-0.1633	0.5281	-2.5407	0.6605
NI		-0.2052	-0.2043	-0.1466	0.1899	-0.7421	0.0496
CFO		0.0681	0.0530	-0.0369	0.4363	-0.6526	1.7986
ROA		-0.0546	-0.0498	-0.0396	0.1305	-0.5599	0.2349
PANEL B	t_{-2} vs t_{-1}						
DA		-0.0673	-0.0714	-0.0371	0.1940	-0.6351	0.4274
TA		-0.1283	-0.1307	-0.0586	0.2611	-0.6768	0.4014
NI		-0.0977	-0.0976	-0.0801	0.1028	-0.4127	0.0909
CFO		0.0306	0.0280	-0.0280	0.2308	-0.3475	0.6493
ROA		-0.0236	-0.0218	-0.0178	0.0987	-0.3675	0.2757
PANEL C	t_0 vs t_{-1}						
DA		-0.0406	-0.0347	-0.0146	0.2169	-0.8098	0.3305
TA		-0.0031	0.0067	0.0047	0.1578	-0.5769	0.2541
NI		0.0095	0.0089	0.0098	0.0374	-0.0878	0.1214
CFO		0.0126	0.0044	0.0039	0.1520	-0.2647	0.5958
ROA		-0.0504	-0.0479	-0.0373	0.0709	-0.2794	0.0670
PANEL D	t_1 vs t_{-1}						
DA		-0.0378	-0.0273	-0.0026	0.2586	-1.0914	0.5565
TA		0.0011	0.0031	-0.0034	0.2250	-0.9353	0.6943
NI		-0.0433	-0.0310	-0.0043	0.1594	-0.9059	0.0919
CFO		-0.0445	-0.0299	-0.0216	0.1843	-0.8785	0.2435
ROA		-0.1097	-0.0946	-0.0654	0.1739	-1.0363	0.0452
PANEL E	t_2 vs t_{-1}						
DA		-0.1276	-0.1301	-0.0657	0.2149	-0.7255	0.3398
TA		-0.0894	-0.0802	-0.0424	0.1734	-0.7449	0.1733
NI		-0.0745	-0.0689	-0.0164	0.1648	-0.6874	0.1122
CFO		0.0149	0.0128	0.0078	0.1145	-0.2408	0.3419
ROA		-0.1394	-0.1369	-0.0768	0.1553	-0.6259	0.0425

*Discretionary accruals is the estimate of the change in total accruals that is due to the exercise of accounting discretion by issuers. It is estimated as:

$$\text{Discretionary accruals (DA)} = \frac{\text{Total Accruals}_t - \text{Total Accruals}_{t-1}}{\text{Total Assets}_t - \text{Total Assets}_{t-1}}$$

**The change in the other variables shown above (Total Accruals, Net Income, Cash Flow from Operations, Return on Sales, Return on Total Assets and Return on Total Assets net of Cash) between the benchmark period and the test period standardised by sales in the test period is given as:

$$\text{Change in variable} = \frac{\text{Variable}_t - \text{Variable}_{t-1}}{\text{Total Assets}_t}$$

TABLE 26c - Descriptive statistics

The table below shows descriptive statistics for the data in the sample of 46 firms. The benchmark time is t_{-1} .

DA is the change in discretionary accruals at time t_n adjusted by total assets net of cash,

TA is the change in total accruals at time t_n adjusted by total assets net of cash,

NI is net income before extraordinary items at time t_n , adjusted by total assets net of cash,

CFO is the change in cash flow from operations at time t_n adjusted by total assets net of cash,

ROANoC is the change in return on total assets net of cash at time t_n ,

Winsorization takes place at the 5th and 95th percentile. t_n takes the values of -3, -2, 0, 1, and 2

		Mean	Mean (winsorized)	Median	Standard Deviation	Minimum	Maximum
PANEL A	t_{-3} vs t_{-1}						
DA*		-0.1243	-0.1346	-0.1092	0.2254	-0.6126	0.5568
TA**		-0.2309	-0.2191	-0.0696	0.5162	-2.0689	0.7379
NI		-0.4025	-0.2037	-0.0701	1.5563	-10.4761	0.0241
CFO		0.0877	0.0696	-0.0371	0.4814	-0.6999	1.9278
ROANoC		-0.0658	-0.0591	-0.0473	0.1436	-0.6008	0.2414
PANEL B	t_{-2} vs t_{-1}						
DA		-0.0796	-0.0814	-0.0378	0.2164	-0.6940	0.4136
TA		-0.1561	-0.1500	-0.0588	0.3233	-1.2359	0.4088
NI		-0.1128	-0.1055	-0.0844	0.1398	-0.7543	0.0926
CFO		0.0433	0.0355	-0.0370	0.2635	-0.3535	0.7770
ROANoC		-0.0334	-0.0298	-0.0264	0.1051	-0.4109	0.2697
PANEL C	t_0 vs t_{-1}						
DA		-0.0391	-0.0295	-0.0174	0.2677	-0.9709	0.4643
TA		0.0022	0.0116	0.0107	0.2104	-0.7655	0.4011
NI		0.0087	0.0104	0.0127	0.0683	-0.2366	0.1964
CFO		0.0065	-0.0052	0.0029	0.2014	-0.3366	0.6804
ROANoC		-0.0653	-0.0449	-0.0344	0.1881	-1.2212	0.0864
PANEL D	t_1 vs t_{-1}						
DA		-0.0211	-0.0243	-0.0174	0.3509	-1.2898	1.4266
TA		0.0202	0.0064	-0.0051	0.3238	-1.1325	1.4548
NI		-0.0558	-0.0346	-0.0055	0.2146	-1.0969	0.1837
CFO		-0.0761	-0.0307	-0.0307	0.3601	-2.2393	0.2635
ROANoC		-0.1288	-0.1069	-0.0612	0.2249	-1.2284	0.0534
PANEL E	t_2 vs t_{-1}						
DA		-0.1331	-0.1340	-0.0740	0.2302	-0.7491	0.3758
TA		-0.0911	-0.0856	-0.0471	0.1863	-0.7511	0.2361
NI		-0.0738	-0.0799	-0.0168	0.2016	-0.6894	0.4995
CFO		0.0172	0.0231	0.0082	0.1451	-0.4195	0.3874
ROANoC		-0.1422	-0.1532	-0.0796	0.2063	-0.6344	0.5545

*Discretionary accruals is the estimate of the change in total accruals that is due to the exercise of accounting discretion by issuers. It is estimated as:

$$\text{Discretionary accruals (DA)} = \frac{\text{Total Accruals}_t - \text{Total Accruals}_{t-1}}{\text{Total Assets}_t - \text{Total Assets}_{t-1}}$$

**The change in the other variables shown above (Total Accruals, Net Income, Cash Flow from Operations, Return on Sales, Return on Total Assets and Return on Total Assets net of Cash) between the benchmark period and the test period standardised by sales in the test period is given as:

$$\text{Change in variable} = \frac{\text{Variable}_t - \text{Variable}_{t-1}}{\text{Total Assets}_t}$$

Table 27 – Sales growth statistical test

The table below shows the growth of CSE IPO firms in the sample where:

Growth = $\frac{\text{Sales}_{t_0}}{\text{Sales}_{t-1}}$ (growth greater than 1 indicates that a firm has increased in size)

Sales_{t-1}

We also test the hypothesis that growth between the periods is equal to 1 by employing *t*- and *Wilcoxon* statistical tests.

	<i>Mean</i>	<i>Median</i>	<i>Number > 1</i>	<i>Percent >1</i>	<i>Minimum</i>	<i>Maximum</i>
t_{-3} to t_{-2}	1.278**	1.143 [^]	39	84.78	0.672	4.067
t_{-2} to t_{-1}	1.297*	1.225 [^]	41	89.13	0.934	2.247
t_{-1} to t_0	1.339*	1.227 [^]	42	91.30	0.654	3.707
t_0 to t_1	1.469*	1.178 [^]	38	82.61	0.516	5.041
t_1 to t_2	1.477***	1.077 ^{^^}	33	71.74	0.159	9.744

*p-value of two-tailed t-test of whether growth between periods is equal to 1. [^]p-value of Wilcoxon test of whether growth between periods is equal to 1.). * ([^]), ** (^{^^}), *** (^{^^^}) denotes statistical significance at the 1%, 5% and 10% level for t- and (Wilcoxon) tests respectively.

Table 28 - Descriptive Statistics of Regression Variables

	<i>Mean</i>	<i>Median</i>	<i>Standard Deviation</i>	<i>Maximum</i>	<i>Minimum</i>
<i>PANEL A - Independent variables</i>					
AUD	0.696	1.000	0.465	1.000	0.000
UND	0.565	1.000	0.501	1.000	0.000
LEVER	0.895	0.699	0.824	3.589	0.000
LNGPR	15.056	15.082	1.271	17.463	12.454
LNTAL	5.532	5.501	0.568	6.924	4.443
OFPR	0.920	0.854	0.235	1.709	0.478
STDRTNS	0.228	0.104	0.289	1.382	0.000
<i>PANEL B - Earnings management variables deflated by sales</i>					
DA	-0.057	-0.033	0.196	0.452	-0.558
TACCR	-0.079	-0.035	0.211	0.418	-0.655
CRED	-0.007	0.003	0.168	0.502	-0.599
INVENT	-0.009	-0.007	0.163	0.671	-0.576
REC	-0.022	-0.027	0.121	0.221	-0.505
DEP	0.038	0.002	0.102	0.401	-0.081
CFO	-0.007	-0.031	0.191	0.559	-0.502
<i>PANEL C - Earnings management variables deflated by total assets</i>					
DA	-0.067	-0.037	0.194	0.427	-0.635
TACCR	-0.128	-0.059	0.261	0.401	-0.677
CRED	-0.026	-0.011	0.082	0.086	-0.486
INVENT	-0.025	-0.011	0.045	0.006	-0.278
REC	-0.038	-0.018	0.059	0.081	-0.196
DEP	-0.002	-0.008	0.043	0.202	-0.075
CFO	0.031	-0.028	0.231	0.649	-0.348
<i>PANEL D - Earnings management variables deflated by total assets net of cash</i>					
DA	-0.079	-0.038	0.216	0.414	-0.694
TACCR	-0.156	-0.059	0.323	0.409	-1.236
CRED	-0.103	-0.035	0.319	0.299	-1.972
INVENT	-0.073	-0.045	0.109	0.014	-0.466
REC	-0.173	-0.085	0.317	0.267	-1.273
DEP	-0.013	-0.028	0.123	0.561	-0.319
CFO	0.043	-0.037	0.263	0.777	-0.353
<i>PANEL E - Dependent variables</i>					
ADRAW	1.588	0.342	2.602	12.259	-0.196
CAR12	0.089	0.125	0.435	0.786	-1.035
CAR24	-0.084	-0.104	0.596	1.209	-1.714
CAR36	-0.202	-0.250	0.719	1.356	-1.832

TABLE 29 – Univariate tests for profitability and accruals

This table presents the results of univariate tests with t_1 as the benchmark year and t_3 , t_2 and t_0 , t_1 , and t_2 as the test years. Year t_0 is the IPO year. Years t_2 and t_3 are the years before the benchmark year t_1 and years t_0 , t_1 , and t_2 are the years after the benchmark year. ROS is return on sales, ROA is return on Total Assets, ROANoC is return on total assets net of cash, NI is Net income, CFO is cash flow from operations, DA is Discretionary Accruals and TACCR is total accruals. The mean and median of each variable relative to t_1 is tested whether is zero. Note: p-values of t- and Wilcoxon statistics are shown above (the latter in parentheses). *, **, *** denotes statistical significance at the 1%, 5% and 10% level respectively.

		<i>Years relative to t_1</i>									
		-2		-1		1		2		3	
PANEL A - PROFITABILITY, INCOME AND CASH FLOW											
ΔROS	t-statistic	-6.046	(0.000)*	-4.969	(0.000)*	-0.508	(0.614)	-4.161	(0.000)*	-4.183	(0.000)*
	Wilcoxon signed rank test	-4.795	(0.000)*	-4.415	(0.000)*	-0.613	(0.540)	-4.016	(0.000)*	-4.793	(0.000)*
	% of obs > 0	91.30%	(0.000)*	82.60%	(0.000)*	45.70%	(0.659)	23.90%	(0.000)*	15.20%	(0.000)*
ΔROA	t-statistic	-2.836	(0.007)*	-1.621	(0.112)	-4.819	(0.000)*	-4.279	(0.000)*	-6.086	(0.000)*
	Wilcoxon signed rank test	-2.969	(0.003)*	-1.967	(0.049)	-4.373	(0.000)*	-4.016	(0.000)*	-5.275	(0.000)*
	% of obs > 0	76.10%	(0.000)*	63.00%	(0.104)	80.40%	(0.000)*	13.00%	(0.000)*	10.90%	(0.000)*
ΔROANoC	t-statistic	-3.106	(0.003)*	-2.160	(0.036)**	-2.353	(0.023)**	-3.884	(0.000)*	-4.676	(0.000)*
	Wilcoxon signed rank test	-3.087	(0.002)*	-2.519	(0.012)**	-3.580	(0.000)*	-4.839	(0.000)*	-4.796	(0.000)*
	% of obs > 0	82.60%	(0.000)*	67.40%	(0.030)**	26.10%	(0.002)*	10.90%	(0.000)*	13.40%	(0.000)*
ΔNI	t-statistic	-6.886	(0.000)*	-5.442	(0.000)*	1.927	(0.060)***	-2.056	(0.046)**	-2.709	(0.009)*
	Wilcoxon signed rank test	-5.187	(0.000)*	-4.888	(0.000)*	2.018	(0.044)**	-1.272	(0.203)	-2.783	(0.005)*
	% of obs > 0	93.50%	(0.000)*	89.10%	(0.000)*	65.20%	(0.054)***	43.40%	(0.461)	34.80%	(0.054)***
ΔCFO	t-statistic	0.549	(0.586)	-0.253	(0.802)	0.877	(0.385)	-1.736	(0.089)***	0.391	(0.698)
	Wilcoxon signed rank test	-0.086	(0.932)	-0.347	(0.729)	0.248	(0.804)	-1.812	(0.069)***	0.332	(0.739)
	% of obs > 0	54.30%	(0.659)	58.70%	(0.302)	54.30%	(0.659)	41.30%	(0.302)	54.30%	(0.659)
NUMBER OF FIRMS IN THE SAMPLE		46		46		46		46		46	

		<i>Years relative to t_1</i>									
		-2		-1		1		2		3	
PANEL B - DISCRETIONARY AND TOTAL ACCRUALS											
DA_S	t-statistic	-4.409	(0.000)*	-1.967	(0.055)***	-0.678	(0.501)	0.879	(0.384)	-3.088	(0.003)*
	Wilcoxon signed rank test	-4.084	(0.000)*	-2.039	(0.041)**	0.149	(0.881)	0.353	(0.724)	-2.961	(0.003)*
	<i>% of obs > 0</i>	78.00%	(0.000)*	65.20%	(0.054)***	47.80%	(0.883)	56.50%	(0.462)	30.40%	(0.011)**
DA_{TA}	t-statistic	-3.793	(0.000)*	-2.353	(0.023)**	-1.271	(0.210)	-0.991	(0.327)	-4.026	(0.000)*
	Wilcoxon signed rank test	-3.563	(0.000)*	-2.330	(0.019)**	-1.039	(0.299)	-0.773	(0.439)	-3.681	(0.000)*
	<i>% of obs > 0</i>	80.40%	(0.000)*	60.90%	(0.184)	39.10%	(0.185)	47.80%	(0.883)	26.10%	(0.002)*
DA_{TANoC}	t-statistic	-3.739	(0.000)*	-2.494	(0.022)**	-0.990	(0.327)	-0.408	(0.685)	-3.920	(0.000)*
	Wilcoxon signed rank test	-3.614	(0.000)*	-2.383	(0.018)**	-0.680	(0.496)	-0.614	(0.539)	-3.518	(0.000)*
	<i>% of obs > 0</i>	80.40%	(0.000)*	60.90%	(0.184)	43.50%	(0.461)	45.70%	(0.883)	28.30%	(0.005)*
ΔTACCR_S	t-statistic	-3.215	(0.000)*	-2.549	(0.014)**	-0.689	(0.494)	0.788	(0.435)	-2.921	(0.005)*
	Wilcoxon signed rank test	-3.536	(0.002)*	-2.276	(0.023)**	0.495	(0.754)	0.286	(0.775)	-3.274	(0.001)*
	<i>% of obs > 0</i>	73.90%	(0.002)*	60.90%	(0.184)	52.10%	(0.884)	50.00%	(0.997)	30.40%	(0.011)**
ΔTACCR_{TA}	t-statistic	-3.509	(0.000)*	-3.333	(0.002)*	-1.134	(0.894)	-0.034	(0.973)	-3.495	(0.001)*
	Wilcoxon signed rank test	-3.67	(0.002)*	-2.825	(0.005)*	0.418	(0.676)	-0.01	(0.992)	-3.392	(0.000)*
	<i>% of obs > 0</i>	73.90%	(0.002)*	60.90%	(0.184)	52.20%	(0.883)	50.00%	(0.997)	30.40%	(0.011)**
ΔTACCR_{TANoC}	t-statistic	-3.033	(0.004)*	-3.275	(0.002)*	0.072	(0.943)	0.424	(0.674)	-3.316	(0.002)*
	Wilcoxon signed rank test	-2.793	(0.005)*	-2.859	(0.004)*	0.569	(0.569)	0.146	(0.884)	-3.173	(0.002)*
	<i>% of obs > 0</i>	60.90%	(0.184)	60.90%	(0.184)	54.30%	(0.659)	50.00%	(0.997)	30.40%	(0.011)**
NUMBER OF FIRMS IN THE SAMPLE		46		46		46		46		46	

TABLE 30 – Univariate tests for profitability and accruals pre and post IPO			
PANEL A - Profitability ratios			
		t-test	Wilcoxon sign-rank test
ROS _{all}	statistic	5.919	5.266
	probability	(0.000)*	(0.000)*
	% of obs > 0		89.13%
ROS _{pre}	statistic	6.488	5.189
	probability	(0.000)*	(0.000)*
	% of obs > 0		91.30%
ROS _{post}	statistic	4.354	4.009
	probability	(0.000)*	(0.000)*
	% of obs > 0		71.74%
ROA _{all}	statistic	5.692	5.550
	probability	(0.000)*	(0.000)*
	% of obs > 0		93.48%
ROA _{pre}	statistic	2.518	2.994
	probability	(0.015)**	(0.003)*
	% of obs > 0		71.74%
ROA _{post}	statistic	5.803	5.474
	probability	(0.000)*	(0.000)*
	% of obs > 0		86.96%
ROANoC _{all}	statistic	5.606	5.736
	probability	(0.000)*	(0.000)*
	% of obs > 0		95.65%
ROANoC _{pre}	statistic	2.959	3.387
	probability	(0.005)*	(0.000)*
	% of obs > 0		78.26%
ROANoC _{post}	statistic	5.292	5.343
	probability	(0.000)*	(0.000)*
	% of obs > 0		89.13%
No of observations		46	46

TABLE 30 - Univariate tests for profitability and accruals pre and post IPO

PANEL B- Total accruals					
		t-test		Wilcoxon sign-rank test	Winsorised
TACCRS _{all}	statistic	2.075		1.945	
	probability	(0.044)**	(0.000)*	(0.052)***	(0.000)*
	% of obs > 0			58.69%	
TACCRS _{pre}	statistic	4.044		3.988	
	probability	(0.000)*		(0.000)*	
	% of obs > 0			78.26%	
TACCRS _{post}	statistic	1.142		0.983	
	probability	(0.260)	(0.051)***	(0.326)	(0.169)
	% of obs > 0			52.17%	
TACCRTA _{all}	statistic	3.313		2.775	
	probability	(0.002)*		(0.006)*	
	% of obs > 0			60.87%	
TACCRTA _{pre}	statistic	3.485		3.704	
	probability	(0.001)*		(0.000)*	
	% of obs > 0			78.26%	
TACCRTA _{post}	statistic	2.601		2.141	
	probability	(0.013)**		(0.032)**	
	% of obs > 0			60.87%	
TACCRTANoC _{all}	statistic	3.134		2.753	
	probability	(0.003)*		(0.006)*	
	% of obs > 0			60.87%	
TACCRTANoC _{pre}	statistic	3.547		3.698	
	probability	(0.000)		(0.000)	
	% of obs > 0			76.09%	
TACCTTANoC _{post}	statistic	2.214		1.868	
	probability	(0.032)**	(0.006)*	(0.062)***	(0.022)**
	% of obs > 0			56.52%	
No of observations		46		46	

Table 30 (Cont.)

The table above shows the results for the univariate tests for the variables Return on Sales (ROS),

Return on Total Assets (ROA)

Return of Total Assets Net of Cash (ROANoC) and Total Accruals (TACCR). These variables are tested in three states namely:

Variable_{all} = Variable t_{-1} - Average of Variable $t_{-3}, t_{-2}, t_0, t_1, t_2$

Variable_{pre} = Variable t_{-1} - Average of Variable t_{-3}, t_{-2}

Variable_{post} - Variable t_{-1} - Average of Variable t_0, t_1, t_2

We employ the t-test and the Wilcoxon sign-rank statistic to test whether the mean and median of these variables is significantly different

from zero. Year t_{-1} is the benchmark year (the year of the last audited accounts of an IPO firm found in the prospectus), t_0 is the IPO year.

Years t_1 and t_2 are the years after the IPO year and years t_{-3} and t_{-2} are the years prior to the benchmark year t_{-1} .

TABLE 31a - Regression Results for the Short-Run

	Regression 1	Regression 2	Regression 3	Regression 4	Regression 5	Regression 6	Regression 7	Regression 8	Regression 9
Intercept	3.017/3.036 <i>(0.005)**/(0.004)*</i>	2.824/2.793 <i>(0,008)**/(0.008)*</i>	2.964/2.779 <i>(0,005)**/(0.009)*</i>	2.979/2.880 <i>(0,005)**/(0.007)*</i>	2.938/2.759 <i>(0,006)**/(0.009)*</i>	3.050/2.792 <i>(0.004)**/(0.008)*</i>	1.798/2.056 <i>(0.081)***/(0.048)**</i>	2.698/2.696 <i>(0,011)**/(0.011)**</i>	2.469/2.128 <i>(0,019)**/(0.041)**</i>
AUD	1.266/1.294 <i>(0.214)/(0.204)</i>	1.282/1.316 <i>(0,208)/(0.196)</i>	1.205/1.208 <i>(0.236)/(0.235)</i>	1.436/1.308 <i>(0.159)/(0.199)</i>	1.050/1.160 <i>(0.301)/(0.254)</i>	1.067/1.145 <i>(0.293)/(0.260)</i>	1.262/0.847 <i>(0.216)/(0.403)</i>	1.144/1.076 <i>(0.261)/(0.289)</i>	1.130/1.151 <i>(0.267)/(0.258)</i>
UND	-1.849/-2.107 <i>(0.073)***/(0.042)**</i>	-1.916/-2.077 <i>(0,063)***/(0.045)**</i>	-1.802/-1.953 <i>(0.079)***/(0.059)***</i>	-2.137/-2.176 <i>(0.039)**/(0.036)**</i>	-1.773/-1.921 <i>(0,085)***/(0.063)***</i>	-1.650/-1.841 <i>(0.108)/(0.074)*</i>	-1.806/-1.701 <i>(0.080)***/(0.098)***</i>	-1.367/-1.300 <i>(0.181)/(0.202)</i>	-1.585/-1.698 <i>(0.123)/(0.097)***</i>
LEVER	2.114/2.057 <i>(0.042)**/(0.047)**</i>	2.049/1.911 <i>(0,048)**/(0.064)***</i>	1.922/1.889 <i>(0.063)***/(0.067)***</i>	1.884/1.997 <i>(0.068)***/(0.0534)***</i>	1.649/1.571 <i>(0.108)/(0.125)</i>	1.483/1.375 <i>(0.147)/(0.178)</i>	2.297/2.924 <i>(0.028)**/(0.006)*</i>	1.777/2.072 <i>(0.085)***/(0.046)**</i>	1.695/1.996 <i>(0.098)***/(0.054)***</i>
LNGPR	-0.890/-0.952 <i>(0.379)/(0.347)</i>	-1.177/-1.096 <i>(0.247)/(0.281)</i>	-1.344/-1.176 <i>(0.187)/(0.247)</i>	-0.677/0.911 <i>(0.503)/(0.369)</i>	-1.373/-1.291 <i>(0.178)/(0.205)</i>	-1.448/-1.326 <i>(0.156)/(0.193)</i>	-0.037/-0.257 <i>(0.971)/(0.798)</i>	-1.401/-1.531 <i>(0.171)/(0.135)</i>	-0.978/-0.705 <i>(0.335)/(0.486)</i>
LNTAL	-3.573/-3.549 <i>(0.001)**/(0.001)*</i>	-3.251/-3.229 <i>(0,002)**/(0.003)*</i>	-3.332/-3.171 <i>(0.002)**/(0.003)*</i>	-3.705/-3.394 <i>(0.000)**/(0.002)*</i>	-3.269/-3.103 <i>(0.002)**/(0.004)*</i>	-3.319/3.133 <i>(0.002)**/(0.003)*</i>	-2.465/-2.778 <i>(0.019)**/(0.009)*</i>	-2.839/-2.719 <i>(0.008)**/(0.010)*</i>	-2.807/-2.582 <i>(0.008)**/(0.015)**</i>
OFPR	-2.676/-2.505 <i>(0.011)**/(0.017)**</i>	-1.826/-1.848 <i>(0.076)***/(0.073)***</i>	-1.890/-1.841 <i>(0.067)***/(0.074)***</i>	-2.602/-2.322 <i>(0.013)**/(0.026)**</i>	-1.977/-1.776 <i>(0.056)***/(0.084)***</i>	-2.074/-1.774 <i>(0.045)**/(0.085)***</i>	-2.439/-2.978 <i>(0.020)**/(0.005)*</i>	-1.834/-1.383 <i>(0.076)/(0.176)</i>	-1.892/-1.607 <i>(0.067)***/(0.118)</i>
STDRSNS	5.740/5.571 <i>(0,000)**/(0.000)*</i>	4.702/4.703 <i>(0,000)**/(0.000)*</i>	4.645/4.587 <i>(0.000)**/(0.000)*</i>	6.619/5.402 <i>(0,000)**/(0.000)*</i>	4.533/4.529 <i>(0.000)**/(0.000)*</i>	4.498/4.534 <i>(0.000)**/(0.000)*</i>	7.622/6.150 <i>(0.000)**/(0.000)*</i>	5.920/5.772 <i>(0.000)**/(0.000)*</i>	5.081/5.688 <i>(0.000)**/(0.000)*</i>
CFO	-1.642/-1.302 <i>(0.109)/(0.201)</i>	-1.599/-1.013 <i>(0.118)/(0.318)</i>	-1.744/-0.940 <i>(0.089)***/(0.353)</i>	-1.988/-1.231 <i>(0.054)***/(0.226)</i>	-2.057/-1.110 <i>(0.047)**/(0.274)</i>	-1.994/-1.156 <i>(0.054)***/(0.255)</i>	0.906/1.185 <i>(0.371)/(0.245)</i>	-1.026/0.084 <i>(0.312)/(0.933)</i>	-0.591/0.059 <i>(0.558)/(0.953)</i>
DA	2.065/1.807 <i>(0.046)**/(0.079)***</i>	1.539/1.559 <i>(0.133)/(0.128)</i>	1.714/1.520 <i>(0.095)***/(0.137)</i>						
TACCR				2.155/1.698 <i>(0.038)**/(0.098)***</i>	1.831/1.514 <i>(0.075)***/(0.139)</i>	1.633/1.530 <i>(0.111)/(0.135)</i>			
CRED							1.825/1.572 <i>(0.077)***/(0.125)</i>	2.934/1.482 <i>(0.006)**/(0.148)</i>	2.851/1.615 <i>(0,008)**/(0.116)</i>
DEP							-1.918/-2.729 <i>(0.064)***/(0.010)*</i>	0.425/0.950 <i>(0.674)/(0.349)</i>	-0.098/-0.055 <i>(0.923)/(0.957)</i>
INVENT							-1.422/0.030 <i>(0.164)/(0.978)</i>	-0.485/-0.001 <i>(0.631)/(0.998)</i>	-0.089/-0.024 <i>(0.931)/(0.981)</i>
REC							0.697/0.524 <i>(0.491)/(0.604)</i>	1.717/(1.243) <i>(0.095)***/(0.223)</i>	1.318/0.898 <i>(0.197)/(0.376)</i>
R²	87.60%/87.28%	86.37%/86.30%	86.23%/86.23%	88.06%/87.01%	86.52%/86.05%	86.60%/86.23%	89.34%/88.55%	88.55%/87.95%	87.73%/87.66%
Adj R²	84.50%/84.10%	82.96%/82.88%	82.79%/82.79%	85.07%/83.77	83.14%/82.57%	83.26%/82.79%	85.46%/84.39%	84.38%/83.57%	83.27%/83.16%
F-statistic	28.264/27.450 <i>(0.000)**/(0.000)*</i>	25.340/25.210 <i>(0.000)**/(0.000)*</i>	25.049/25.049 <i>(0.000)**/(0.000)*</i>	29.499/26.800 <i>(0.000)**/(0.000)*</i>	25.662/24.685 <i>(0.000)**/(0.000)*</i>	25.861/25.067 <i>(0.000)**/(0.000)*</i>	23.052/21.279 <i>(0.000)**/(0.000)*</i>	21.262/20.071 <i>(0.000)**/(0.000)*</i>	19.660/19.526 <i>(0.000)**/(0.000)*</i>
N	46	46	46	46	46	46	46	46	46

***denotes statistical significance at the 10% level, ** denotes statistical significance at the 5% level and * denotes statistical significance at the 1% level

TABLE 31b - Regression Results for CAR12

	Regression 1	Regression 2	Regression 3	Regression 4	Regression 5	Regression 6	Regression 7	Regression 8	Regression 9
Intercept	-2.184/-2.225 <i>(0.036)**/(0.032)**</i>	-2.278/-2.249 <i>(0.029)**/(0.031)**</i>	-2.330/-2.306 <i>(0.026)**/(0.027)**</i>	-2.260/-2.285 <i>(0.030)**/(0.028)**</i>	-2.315/-2.270 <i>(0.026)**/(0.029)**</i>	-2.373/-2.296 <i>(0.023)**/(0.028)**</i>	-1.570/-1.857 <i>(0.126)/(0.072)***</i>	-1.685/-1.098 <i>(0.101)/(0.280)</i>	-1.830/-1.279 <i>(0.076)***/(0.210)</i>
AUD	1.267/1.313 <i>(0.213)/(0.198)</i>	1.333/1.308 <i>(0.191)/(0.199)</i>	1.347/1.296 <i>(0.187)/(0.203)</i>	1.285/1.345 <i>(0.207)/(0.187)</i>	1.316/1.312 <i>(0.197)/(0.198)</i>	1.343/1.290 <i>(0.188)/(0.205)</i>	1.034/1.354 <i>(0.309)/(0.185)</i>	1.200/0.995 <i>(0.239)/(0.327)</i>	1.223/1.163 <i>(0.230)/(0.253)</i>
UND	-1.898/-1.941 <i>(0.066)***/(0.060)***</i>	-2.045/(-2.010) <i>(0.048)**/(0.052)***</i>	-2.159/-2.127 <i>(0.038)**/(0.040)**</i>	-1.950/-1.975 <i>(0.059)***/(0.056)***</i>	-2.049/-1.999 <i>(0.048)**/(0.053)***</i>	-2.141/-2.114 <i>(0.039)**/(0.042)**</i>	-1.719/-2.142 <i>(0.095)***/(0.039)**</i>	-1.914/-1.219 <i>(0.064)***/(0.232)</i>	-2.088/-1.669 <i>(0.045)**/(0.105)</i>
LEVER	1.141/1.506 <i>(0.166)/(0.141)</i>	1.515/1.522 <i>(0.139)/(0.137)</i>	1.638/1.623 <i>(0.110)/(0.113)</i>	1.405/1.487 <i>(0.169)/(0.146)</i>	1.371/1.373 <i>(0.179)/(0.178)</i>	1.474/1.592 <i>(0.149)/(0.120)</i>	1.627/1.521 <i>(0.113)/(0.138)</i>	1.843/1.122 <i>(0.074)***/(0.269)</i>	1.768/1.318 <i>(0.086)***/(0.196)</i>
LNGPR	3.992/4.057 <i>(0.000)*/(0.000)*</i>	3.957/3.967 <i>(0.000)*/(0.000)*</i>	4.034/4.029 <i>(0.000)*/(0.000)*</i>	3.929/4.142 <i>(0.000)*/(0.000)*</i>	4.188/4.092 <i>(0.000)*/(0.000)*</i>	4.273/3.988 <i>(0.000)*/(0.000)*</i>	3.002/3.173 <i>(0.005)*/(0.003)*</i>	2.657/1.885 <i>(0.012)**/(0.068)***</i>	2.937/2.321 <i>(0.006)*/(0.027)**</i>
LNTAL	0.741/0.839 <i>(0.464)/(0.407)</i>	0.950/0.937 <i>(0.348)/(0.355)</i>	0.984/0.974 <i>(0.332)/(0.337)</i>	0.880/0.881 <i>(0.385)/(0.384)</i>	0.947/0.945 <i>(0.350)/(0.351)</i>	0.974/1.003 <i>(0.337)/(0.323)</i>	0.575/0.904 <i>(0.569)/(0.372)</i>	0.909/0.885 <i>(0.370)/(0.383)</i>	0.748/0.566 <i>(0.460)/(0.576)</i>
OFPR	-2.456/-2.547 <i>(0.019)**/(0.015)**</i>	-2.278/-2.395 <i>(0.029)**/(0.022)**</i>	-2.221/-2.309 <i>(0.033)**/(0.027)**</i>	-2.458/-2.586 <i>(0.019)**/(0.014)**</i>	-2.298/-2.391 <i>(0.028)**/(0.022)**</i>	-2.234/-2.287 <i>(0.032)**/(0.028)**</i>	-2.400/-2.632 <i>(0.022)**/(-0.013)**</i>	-1.798/-2.144 <i>(0.081)***/(0.039)**</i>	-1.892/-2.042 <i>(0.067)***/(0.049)**</i>
STDRTNS	-0.340/-0.386 <i>(0.736)/(0.702)</i>	-0.478/-0.429 <i>(0.635)/(0.670)</i>	-0.507/-0.428 <i>(0.616)/(0.671)</i>	-0.317/0.380 <i>(0.753)/(0.706)</i>	-0.479/-0.455 <i>(0.635)/(0.652)</i>	-0.503/-0.419 <i>(0.618)/(0.678)</i>	-0.622/-0.898 <i>(0.538)/(0.376)</i>	-1.070/-1.245 <i>(0.292)/(0.222)</i>	-0.799/-0.806 <i>(0.430)/(0.426)</i>
CFO	-0.254/-0.262 <i>(0.801)/(0.795)</i>	0.783/0.350 <i>(0.439)/(0.728)</i>	1.179/0.830 <i>(0.246)/(0.412)</i>	-0.241/-0.364 <i>(0.811)/(0.718)</i>	0.497/0.199 <i>(0.622)/(0.843)</i>	0.900/0.899 <i>(0.374)/(0.375)</i>	-0.714/-0.513 <i>(0.479)/(0.611)</i>	0.255/-0.565 <i>(0.801)/(0.576)</i>	0.598/0.313 <i>(0.554)/(0.756)</i>
DA	0.756/0.504 <i>(0.455)/(0.617)</i>	0.027/0.101 <i>(0.979)/(0.920)</i>	-0.109/-0.070 <i>(0.913)/(0.945)</i>						
TACCR				0.575/0.645 <i>(0.569)/(0.523)</i>	0.362/0.198 <i>(0.719)/(0.844)</i>	0.246/-0.356 <i>(0.807)/0.724)</i>			
CRED							-1.212/-1.504 <i>(0.234)/(0.142)</i>	-3.948/-1.641 <i>(0.000)*/(0.110)</i>	-3.368/-1.460 <i>(0.002)*/(0.154)</i>
DEP							-0.269/-0.361 <i>(0.789)/(0.720)</i>	0.799/1.700 <i>(0.430)/(0.098)***</i>	0.751/1,218 <i>(0.458)/(0.232)</i>
INVENT							0.740/1.415 <i>(0.465)/(0.166)</i>	3.390/1.451 <i>(0.002)*/(0.156)</i>	0.343/0.388 <i>(0.734)/(0.701)</i>
REC							0.712/0.323 <i>(0.481)/(0.749)</i>	0.226/1.115 <i>(0.823)/(0.275)</i>	0.160/(0.071) <i>(0.874)/(0.944)</i>
R²	30.86%/30.24%	30.82%/30.27%	32.05%/31.54%	30.28%/30.48%	31.01%/30.33%	32.12%/31.82%	35.08%/38.65%	44.14%/46.29%	39.65%/40.75%
Adj R²	13.57%/12.80%	13.53%/12.84%	15.06%/14.42%	12.85%/13.10%	13.76%/12.91%	15.15%/14.78%	11.47%/16.34%	23.83%/26.76%	17.71%/19.21%
F-statistic	1.785/1.734 <i>(0.105)/(0.117)</i>	1.782/1.736 <i>(0.106)/(0.116)</i>	1.867/1.843 <i>(0.086)***/(0.094)***</i>	1.737/1.754 <i>(0.116)/(0.112)</i>	1.798/1.741 <i>(0.103)/(0.115)</i>	1.893/1.867 <i>(0.085)***/(0.089)***</i>	1.486/1.732 <i>(0.179)/(0.104)</i>	2.173/2.370 <i>(0.039)**/(0.025)**</i>	1.807/1.892 <i>(0.088)***/(0.073)***</i>
N	46	46	46	46	46	46	46	46	46

***denotes statistical significance at the 10% level, ** denotes statistical significance at the 5% level and * denotes statistical significance at the 1% level

TABLE 31c - Regression Results for CAR24

	Regression 1	Regression 2	Regression 3	Regression 4	Regression 5	Regression 6	Regression 7	Regression 8	Regression 9
Intercept	-1.027/-1.071 (0.311)/(0.291)	-1.357/-1.252 (0.183)/(0.219)	-1.377/1.324 (0.177)/(0.194)	-1.158/-1.171 (0.255)/(0.249)	-1.294/-1.249 (0.204)/(0.220)	-1.364/-1.366 (0.181)/(0.180)	-0.749/-0.922 (0.459)/(0.364)	-0.817/0.769 (0.420)/(0.447)	-0.785/0.408 (0.438)/(0.686)
AUD	1.047/1.180 (0.302)/(0.246)	1.148/1.064 (0.259)/(0.294)	1.130/1.064 (0.266)/(0.294)	1.093/1.271 (0.282)/(0.212)	1.115/1.052 (0.272)/(0.300)	1.123/1.070 (0.269)/(0.292)	0.683/1.339 (0.499)/(0.190)	0.955/0.942 (0.347)/(0.353)	1.019/1.015 (0.316)/(0.317)
UND	-1.347/-1.414 (0.186)/(0.166)	-1.407/-1.369 (0.168)/(0.179)	-1.460/-1.443 (0.153)/(0.158)	-1.427/-1.520 (0.162)/(0.137)	-1.402/-1.361 (0.170)/(0.182)	-1.467/-1.472 (0.151)/(0.149)	-1.119/-1.933 (0.271)/(0.062)***	-1.474/-0.934 (0.150)/(0.357)	-1.461/1.135 (0.154)/(0.265)
LEVER	0.292/0.423 (0.772)/(0.675)	0.381/0.408 (0.706)/(0.685)	0.469/0.499 (0.642)/(0.621)	0.245/0.374 (0.808)/(0.711)	0.406/0.557 (0.687)/(0.581)	0.475/0.757 (0.638)/(0.454)	0.815/0.616 (0.421)/(0.542)	0.759/-0.139 (0.453)/(0.890)	0.741/0.167 (0.464)/(0.868)
LNGPR	2.707/2.911 (0.010)*/(0.006)*	2.873/2.735 (0.007)*/(0.009)*	2.913/2.827 (0.006)*/(0.008)*	2.804/3.052 (0.008)*/(0.004)*	2.753/2.656 (0.009)*/(0.012)**	2.876/2.756 (0.007)*/(0.009)*	2.018/2.642 (0.052)***/(0.013)**	1.920/0.051 (0.064)***/(0.959)	1.895/0.759 (0.067)***/(0.453)
LNTAL	-0.348/-0.420 (0.730)/(0.677)	-0.170/-0.167 (0.866)/(0.869)	-0.130/-0.115 (0.898)/(0.909)	-0.289/-0.371 (0.774)/(0.713)	-0.136/-0.127 (0.892)/(0.900)	-0.113/-0.057 (0.911)/(0.955)	-0.309/-0.463 (0.759)/(0.645)	-0.374/-1.104 (0.710)/(0.278)	-0.408/-1.029 (0.686)/(0.211)
OFPR	-1.586/-1.941 (0.121)/(0.060)***	-1.526/-1.687 (0.136)/(0.100)	-1.502/-1.658 (0.142)/(0.106)	-1.638/-2.003 (0.110)/(0.053)***	-1.550/-1.693 (0.130)/(0.099)***	-1.491/-1.709 (0.145)/(0.096)***	-1.341/-2.085 (0.189)/(0.045)**	-0.764/-0.581 (0.450)/(0.566)	-0.984/-0.945 (0.332)/(0.352)
STDRTNS	-1.741/-1.822 (0.090)***/(0.077)***	-1.903/-1.805 (0.065)***/(0.079)***	-1.938/-1.801 (0.061)***/(0.080)***	-1.615/-1.820 (0.115)/(0.077)***	-1.922/-1.794 (0.063)*/(0.081)***	-1.933/-1.787 (0.061)***/(0.082)***	-1.541/-2.087 (0.133)/(0.045)**	-2.072/-3.414 (0.046)**/(0.002)*	-1.952/-2.044 (0.059)***/(0.049)**
CFO	0.373/-0.425 (0.712)/(0.673)	0.959/0.707 (0.344)/(0.484)	1.340/1.127 (0.189)/(0.267)	0.005/-0.763 (0.996)/(0.450)	1.200/0.988 (0.238)/(0.330)	1.390/(1.391) (0.173)/(0.173)	-1.542/-1.002 (0.133)/(0.324)	0.617/-1.837 (0.542)/(0.075)***	1.029/0.034 (0.311)/(0.973)
DA	1.034/1.492 (0.308)/(0.144)	0.535/0.199 (0.596)/(0.843)	0.240/-0.048 (0.812)/(0.962)						
TACCR				1.477/1.984 (0.149)/(0.055)***	0.105/-0.432 (0.917)/(0.668)	0.095/(-0.758) (0.925)/(0.454)			
CRED							-5.299/-4.115 (0.000)*/(0.000)*	-4.139/-4.938 (0.000)*/(0.000)*	-4.415/-3.198 (0.000)*/(0.003)*
DEP							0.053/-1.179 (0.958)/(0.247)	2.920/2.850 (0.006)*/(0.008)*	2.482/2.332 (0.018)**/(0.026)**
INVENT							0.646/2.098 (0.522)/(0.044)**	0.136/2.707 (0.893)/(0.010)*	0.061/1.297 (0.952)/(0.204)
REC							1.727/1.084 (0.093)***/(0.286)	0.533/2.715 (0.597)/(0.010)*	-0.073/0.700 (0.942)/(0.489)
R²	24.88%/25.04%	25.14%/23.93%	26.18%/25.42%	25.67%/26.70%	24.7%/24.10%	26.9%/26.36%	42.41%/48.61%	43.43%/66.15%	40.47%/49.77%
Adj R²	6.10%/6.30%	6.43%/4.90%	7.72%/6.77%	7.09%/8.38%	5.87%/5.13%	7.61%/7.96%	21.47%/29.92%	22.85%/53.85%	18.82%/31.50%
F-statistic	1.325/1.336 (0.259)/(0.253)	1.344/1.258 (0.250)/(0.293)	1.419/1.363 (0.217)/(0.241)	1.382/1.457 (0.233)/(0.201)	1.311/1.271 (0.265)/(0.286)	1.412/1.432 (0.219)/(0.211)	2.025/2.601 (0.054)***/(0.015)**	2.111/5.375 (0.044)**/(0.000)*	1.869/2.725 (0.077)***/(0.011)**
N	46	46	46	46	46	46	46	46	46

***denotes statistical significance at the 10% level, ** denotes statistical significance at the 5% level and * denotes statistical significance at the 1% level

TABLE 31d - Regression Results for CAR36

	Regression 1	Regression 2	Regression 3	Regression 4	Regression 5	Regression 6	Regression 7	Regression 8	Regression 9
Intercept	-1.030/-1.001 <i>(0.310)/(0.324)</i>	-0.979/-0.948 <i>(0.334)/(0.349)</i>	-1.148/-1.108 <i>(0.259)/(0.275)</i>	-0.902/-0.945 <i>(0.373)/(0.351)</i>	-1.236/-1.276 <i>(0.225)/(0.210)</i>	-1.304/-1.427 <i>(0.201)/(0.162)</i>	-0.492/-0.616 <i>(0.626)/(0.542)</i>	-0.637/0.764 <i>(0.528)/(0.451)</i>	-0.494/0.280 <i>(0.625)/(0.781)</i>
AUD	-0.021/0.107 <i>(0.983)/(0.916)</i>	0.001/-0.205 <i>(0.999)/(0.839)</i>	0.086/-0.043 <i>(0.932)/(0.965)</i>	-0.060/0.091 <i>(0.952)/(0.928)</i>	0.286/0.007 <i>(0.777)/(0.994)</i>	0.243/0.068 <i>(0.810)/(0.946)</i>	-0.480/0.274 <i>(0.634)/(0.786)</i>	-0.075/-0.426 <i>(0.941)/(0.673)</i>	-0.022/-0.143 <i>(0.983)/(0.887)</i>
UND	-0.377/-0.422 <i>(0.708)/(0.678)</i>	-0.644/-0.467 <i>(0.523)/(0.643)</i>	-0.833/-0.717 <i>(0.411)/(0.478)</i>	-0.290/-0.414 <i>(0.774)/(0.681)</i>	-0.725/-0.636 <i>(0.473)/(0.529)</i>	-0.884/-0.888 <i>(0.383)/(0.381)</i>	0.234/-1.113 <i>(0.816)/(0.274)</i>	-0.709/0.344 <i>(0.483)/(0.733)</i>	-0.613/-0.091 <i>(0.544)/(0.928)</i>
LEVER	1.066/1.149 <i>(0.294)/(0.258)</i>	1.344/1.581 <i>(0.187)/(0.123)</i>	1.595/1.822 <i>(0.119)/(0.077)***</i>	1.082/1.148 <i>(0.286)/(0.259)</i>	1.721/2.206 <i>(0.094)***/(0.034)**</i>	1.901/2.594 <i>(0.065)***/(0.014)**</i>	1.597/1.398 <i>(0.120)/(0.171)</i>	1.736/0.806 <i>(0.092)/(0.426)</i>	1.641/1.095 <i>(0.110)/(0.281)</i>
LNGPR	2.375/2.509 <i>(0.023)**/(0.017)**</i>	2.392/2.283 <i>(0.022)**/(0.028)**</i>	2.543/2.495 <i>(0.015)**/(0.017)**</i>	2.376/2.613 <i>(0.023)**/(0.013)**</i>	2.564/2.616 <i>(0.015)**/(0.013)**</i>	2.669/2.801 <i>(0.011)**/(0.008)*</i>	1.720/2.408 <i>(0.095)***/(0.022)**</i>	1.964/0.056 <i>(0.058)***/(0.956)</i>	1.832/0.894 <i>(0.076)***/(0.378)</i>
LNTAL	-0.260/-0.434 <i>(0.797)/(0.667)</i>	-0.359/-0.413 <i>(0.722)/(0.682)</i>	-0.236/-0.342 <i>(0.815)/(0.734)</i>	-0.484/-0.558 <i>(0.631)/(0.580)</i>	-0.342/-0.368 <i>(0.734)/(0.715)</i>	-0.303/-0.282 <i>(0.764)/(0.779)</i>	-0.708/-0.888 <i>(0.484)/(0.381)</i>	-0.869/-1.272 <i>(0.391)/0.212</i>	-0.889/-1.298 <i>(0.382)/(0.203)</i>
OFPR	-0.483/-0.777 <i>(0.632)/(0.443)</i>	-0.999/-1.024 <i>(0.324)/(0.313)</i>	-0.935/-0.994 <i>(0.356)/(0.327)</i>	-0.641/-0.892 <i>(0.525)/0.378)</i>	-0.797/-1.061 <i>(0.431)/(0.296)</i>	-0.553/-1.177 <i>(0.584)/(0.247)</i>	-0.404/-1.230 <i>(0.689)/(0.227)</i>	0.005/0.246 <i>(0.996)/(0.808)</i>	-0.239/-0.273 <i>(0.813)/(0.787)</i>
STDRTNS	-2.308/-2.429 <i>(0.027)**/(0.020)**</i>	-2.742/-2.595 <i>(0.009)*/(0.014)**</i>	-2.713/-2.594 <i>(0.010)*/(0.014)**</i>	-2.308/-2.478 <i>(0.027)**/(0.018)**</i>	-2.798/-2.476 <i>(0.008)*/(0.018)**</i>	-2.710/-2.520 <i>(0.010)*/(0.016)**</i>	-2.135/2.851 <i>(0.040)**/(0.008)*</i>	-2.493/-3.887 <i>(0.018)**/(0.000)*</i>	-2.491/-2.632 <i>(0.018)**/(0.013)**</i>
CFO	1.516/0.930 <i>(0.138)/(0.359)</i>	2.060/1.836 <i>(0.047)**/(0.075)***</i>	2.207/2.035 <i>(0.034)**/(0.049)**</i>	1.330/0.729 <i>(0.192)/(0.470)</i>	2.393/2.288 <i>(0.022)**/(0.028)**</i>	2.235/2.401 <i>(0.032)**/(0.022)**</i>	-1.377/-0.408 <i>(0.178)/(0.686)</i>	0.714/-0.299 <i>(0.480)/(0.767)</i>	0.769/0.734 <i>(0.447)/(0.468)</i>
DA	-1.542/-0.932 <i>(0.132)/(0.358)</i>	-1.603/-2.026 <i>(0.118)/(0.050)**</i>	-1.789/-2.210 <i>(0.082)***/(0.034)**</i>						
TACCR				-0.951/-0.528 <i>(0.348)/(0.601)</i>	-2.016/-2.498 <i>(0.051)***/(0.017)**</i>	-1.541/-2.487 <i>(0.132)/(0.018)**</i>			
CRED							-3.615/-2.419 <i>(0.001)*/(0.021)**</i>	-6.048/-2.773 <i>(0.000)*/(0.009)*</i>	-6.354/(-1.541) <i>(0.000)**/(0.133)</i>
DEP							0.711/-0.805 <i>(0.482)/(0.427)</i>	1.852/3.408 <i>(0.073)***/(0.002)*</i>	1.801/1.901 <i>(0.081)***/(0.066)***</i>
INVENT							0.331/1.700 <i>(0.743)/(0.098)***</i>	-0.039/2.227 <i>(0.968)/(0.033)**</i>	0.283/1.077 <i>(0.779)/(0.289)</i>
REC							1.813/0.662 <i>(0.079)***/(0.513)</i>	0.300/0.753 <i>(0.766)/(0.457)</i>	0.008/(-0.328) <i>(0.993)/(0.745)</i>
R²	33.00%/30.52%	35.73%/39.23%	38.75%/42.41%	31.47%/29.64%	36.54%/40.89%	36.5%/44.36%	45.28%/43.09%	49.24%/60.66%	44.76%/46.67%
Adj R²	16.25%/13.15%	19.67%/24.05%	23.43%/28.01%	14.33%/12.04%	20.67%/26.11%	20.63%/30.45%	25.38%/22.39%	30.79%/46.35%	24.67%/27.28%
F-statistic	1.969/1.757 <i>(0.073)***/(0.112)</i>	2.224/2.583 <i>(0.043)**/(0.021)**</i>	2.530/2.945 <i>(0.023)**/(0.010)*</i>	1.837/1.685 <i>(0.095)***/(0.129)</i>	2.303/2.767 <i>(0.037)**/(0.014)**</i>	2.299/3.189 <i>(0.037)**/(0.006)*</i>	2.275/2.082 <i>(0.030)**/(0.048)**</i>	2.668/4.240 <i>(0.013)**/(0.000)*</i>	2.228/2.407 <i>(0.034)**/(0.023)**</i>
N	46	46	46	46	46	46	46	46	46

***denotes statistical significance at the 10% level, ** denotes statistical significance at the 5% level and * denotes statistical significance at the 1% level

Table 32 -Summary comparison of results of the survey with Brau et al (2006)**1. Going public decision****A. Motivations**

Question:	<i>How Important are the following motivations for conducting the IPO?</i>	
	This survey	Brau and Fawcett (2006)
i	To enhance the reputation of our company	To create public shares for use in future acquisitions
ii	To broaden the base of ownership of our firm	To establish a market price/value for our firm
iii	To establish a market price/value for our firm	To enhance the reputation of our company

B. Market timing

Question:	<i>To what extent did the following influence the timing of your possible IPO?</i>	
	This survey	Brau and Fawcett (2006)
i	Overall stock market conditions	Overall stock market conditions
ii	We needed the capital to continue to grow	Industry conditions (conditions in our sector of business)
iii	Industry conditions (conditions in our sector of business)	We needed the capital to continue to grow

2. Underwriter selection

Question:	<i>How important were the following criteria in selecting your lead IPO underwriter?</i>	
	This survey	Brau and Fawcett (2006)
i	Underwriter's overall reputation and status	Underwriter's overall reputation and status
ii	Underwriter's industry expertise and connections	Quality and reputation of the research dept/analyst
iii	Institutional investor client base of the underwriter	Underwriter's industry expertise and connections

3. Underpricing in IPOs

Question:	<i>To what extent do you feel the following led to the level of underpricing* you might have expected?</i>	
	This survey	Brau and Fawcett (2006)
i	Underwriters underprice to incur the favour of institutional investors	To compensate investors for taking the risk of the IPO
ii	To ensure a wide-base of owners	Underwriters underprice to incur the favour of institutional investors
iii	To increase the after-issue trading volume of the stock	To ensure a wide-base of owners

4. Signalling in IPOs

Question:	<i>What type of signal do the following actions convey to investors regarding the value of a firm going public?</i>	
	This survey	Brau and Fawcett (2006)
i	Having strong historical earnings	Having strong historical earnings
ii	Insiders commit to a long lock-up	Using a top investment bank as underwriter and manager of the IPO
iii	Using a top investment bank as underwriter and manager of the IPO	Insiders commit to a long lock-up

5. IPO Process Issues

Question:	<i>From your perspective, how important were the following IPO process issues?</i>	
	This survey	Brau and Fawcett (2006)
i	The need to carry out financial and legal due diligence	A firm-commitment underwriting as opposed to a best-efforts underwriting
ii	Placing shares privately before doing an IPO	The lock-up period to align management with future stockholders
iii	An offering which includes free warrants alongside the shares issued	The overallocation option (Greenshoe)

6. Other IPO issues

Question:	<i>To what extent did each of the following create concern in the decision to conduct an IPO?</i>	
	This survey	Brau and Fawcett (2006)
i	Desire to maintain decision-making control	Desire to maintain decision-making control
ii	Bad market/industry conditions	To avoid ownership dilution
iii	To avoid ownership dilution	Bad market/industry conditions

Table 33 - Sample Representativeness

Panel A consists of the ‘Population’ of IPOs for the time periods surveyed. Panel B consists of the sample of firms in which Cypriot managers responded to the survey which represents results of 30 managers’ responses to a survey of managerial IPOs insights into the IPO process.

<i>Panel A: Population</i>					<i>Panel B: Sample</i>				
Sector	Frequency	Percent	Cumulative frequency	Cumulative percent	Market	Frequency	Percent	Cumulative frequency	Cumulative percent
Other	27	28.1%	27	28.1%	Other	7	24.14%	7	24.14%
IT	5	5.2%	32	33.3%	IT	2	6.90%	9	31.03%
Tourism	6	6.3%	38	39.6%	Tourism	0	0.00%	9	31.03%
Hotels	6	6.3%	44	45.8%	Hotels	3	10.34%	12	41.38%
Trading	14	14.6%	58	60.4%	Trading	5	17.24%	17	58.62%
Fish Culture	3	3.1%	61	63.5%	Fish Culture	1	3.45%	18	62.07%
Manufacturing	15	15.6%	76	79.2%	Manufacturing	3	10.34%	21	72.41%
B. M. & C.	8	8.3%	84	87.5%	B. M. & C.	5	17.24%	26	89.66%
Insurance	4	4.2%	88	91.7%	Insurance	0	0.00%	26	89.66%
Financial Services	8	8.3%	96	100.0%	Financial Services	3	10.34%	29	100.00%

<i>Panel A: Population</i>					<i>Panel B: Sample</i>				
IPO offer year	Frequency	Percent	Cumulative frequency	Cumulative percent	IPO offer year	Frequency	Percent	Cumulative frequency	Cumulative percent
1997	2	2.08%	2	2.08%	1997	1	3.45%	1	3.45%
1998	4	4.17%	6	6.25%	1998	1	3.45%	2	6.90%
1999	9	9.38%	15	15.63%	1999	1	3.45%	3	10.34%
2000	44	45.83%	59	61.46%	2000	13	44.83%	16	55.17%
2001	25	26.04%	84	87.50%	2001	6	20.69%	22	75.86%
2002	10	10.42%	94	97.92%	2002	7	24.14%	29	100.00%
2003	1	1.04%	95	98.96%	2003	0	0.00%	29	100.00%
2004	1	1.04%	96	100.00%	2004	0	0.00%	29	100.00%

Table 34 – Sample Statistics

The sample consists of 30 completed surveys. Average age is the number of years from incorporation date, raw underpricing is the difference between the offer price and the first day closing price, and adjusted underpricing is the difference between the offer price and the first day closing price adjusted for the return of the index from the day of applying to the C.S.E. for listing. Average proceeds is the amount in Cyprus Pounds (CY£) of the proceeds of the issue to the public. Average approval time is the average time taken by the authorities from application submission to listing. Underwriter prestige is on scale of 0-9 and is based on the market shares of the underwriters in the IPO market.

	Population	Sample
Mean age (years)	16.90	18.31
Median age (years)	14.00	14.0
Raw underpricing	116.12%	89.20%
Adjusted underpricing	140.85%	133.55%
Average proceeds (CY£)	7,012.243	7,263.800
Average approval time (days)	337.0	399.2
Underwriter prestige (mean)	5.05	6.08
Underwriter prestige (median)	5.63	5.75
Number of observations	140	30

Table 35 - Why do firms go public? Some dominant theories

Article	Theory
<i>Panel A: Life cycle theories</i>	
Scott (1976), Modigliani and Miller (1963)	IPOs facilitate optimal capital structure.
Myers and Majluf (1984), Myers (1984)	IPOs are a natural consequence of the pecking order theory.
Zingales (1995)	Firms get a higher acquisition price after an IPO.
Mello and Parsons (1998)	IPOs create a public market for increased founder liquidity.
Dhillon, Raman, and Ramirez (1999), Brau, Li, and Shi (2005)	IPOs may allow principals to immediately cash out.
Chemmanur and Fulghieri (1999)	IPOs allow for optimal dispersion of ownership.
Maksimovic and Pichler (2001)	IPOs give first mover/reputation advantage.
Bradley, Jordan, and Ritter (2003)	IPOs allow for the creation of an analyst following.
<i>Panel B: Market-timing theories</i>	
Lucas and McDonald (1990)	Firms postpone IPOs if founders feel they are undervalued.
Choe, Masulis, and Nanda (1993)	Firms avoid IPOs when few other good firms are issuing.
Loughran and Ritter (1995)	IPOs occur during windows of opportunity.
Ritter and Welch (2002) have increased.	IPOs are more likely after public market valuations have increased.
<i>Source: Brau, Ryan and Degraw (2006)</i>	

Table 36 – IPO motivations

Means are based on a five-point Likert scale with anchors of 1= not important to 5=very important. The sample consists of 30 completed surveys of listed companies whose shares were listed in the Cyprus Stock Exchange over the period 1997-2004.

		Mean	% 4-5
1	To enhance the reputation of our company	3.80	73.33%
2	To broaden the base of ownership of our firm	3.60	53.33%
3	To establish a market price/value for our firm	3.53	56.67%
4	To create public shares for use in future acquisitions	3.50	60.00%
5	To minimise our cost of capital	3.07	40.00%
6	To provide management succession for our firm	2.87	33.33%
7	Debt is becoming too expensive	2.77	30.00%
8	To allow shareholders to sell part of their shares	2.57	23.33%
9	Our company has run out of private equity	2.17	16.67%
10	To allow venture capitalists (VCs) to cash-out	1.40	6.67%

Table 37 – IPO timing

Means are based on a five-point Likert scale with anchors of 1= not important to 5=very important. The sample consists of 30 completed surveys of listed companies whose shares were listed in the Cyprus Stock Exchange over the period 1997-2004.

Survey responses to the Question:**To what extent did the following influence the timing of your possible IPO?**

	Mean	% 4-5
1 Overall stock market conditions	4.37	90.00%
2 We needed the capital to continue to grow	4.17	80.00%
3 Industry conditions (conditions in our sector of business)	3.70	66.67%
4 Other good firms were currently going public	3.33	46.67%
5 First-day share price performance of recent IPOs	3.17	50.00%

Table 38 – Criteria for selecting lead underwriter

Means are based on a five-point Likert scale with anchors of 1= not important to 5=very important. The sample consists of 30 completed surveys of listed companies whose shares were listed in the Cyprus Stock Exchange over the period 1997-2004.

Survey responses to the Question:**How important were the following criteria in selecting your lead IPO underwriter?**

	Mean	% 4-5
1 Underwriter's overall reputation and status	4.30	90.00%
2 Underwriter's industry expertise and connections	4.17	86.67%
3 Institutional investor client base of the underwriter	3.50	50.00%
4 Retail client base of the underwriter	3.43	46.67%
5 Pricing and valuation promises	3.07	33.33%
6 Fee structure	3.00	33.33%
7 Non-equity-related services (e.g., advice on Mergers & Acquisitions, debt)	3.00	26.67%
8 Market making, trading desk and liquidity provision services	2.80	30.00%
9 Underwriter is a subsidiary of our company's main commercial bank	2.53	33.33%
10 Underwriter has a reputation for spinning	2.03	6.67%

Table 39 – Expectations for the level of underpricing

Means are based on a five-point Likert scale with anchors of 1= not important to 5=very important. The sample consists of 30 completed surveys of listed companies whose shares were listed in the Cyprus Stock Exchange over the period 1997-2004.

Survey responses to the Question:**To what extent do you feel the following led to the level of underpricing you might have expected?**

	Mean	% 4-5
1 Underwriters underprice to incur the favour of institutional investors	3.00	36.84%
2 To ensure a wide-base of owners	2.95	31.58%
3 To increase the after-issue trading volume of the stock	2.84	15.79%
4 To increase publicity on the opening day	2.74	15.79%
5 To compensate investors for taking the risk of the IPO	2.68	31.58%
6 To compensate investors for truthfully revealing the price they are willing to pay	2.58	21.05%
7 So underwriters can make flipping possible	2.53	15.79%
8 So underwriters can make spinning possible	2.32	10.53%
9 To increase share price by starting a cascade effect amongst investors	2.26	15.79%
10 To create a large block-holder to serve as a watchdog over company management	2.16	0.00%
11 Insiders are willing to underprice because the IPO creates personal wealth	2.11	10.53%
12 Underpricing reduces the need for additional IPO marketing costs	2.11	0.00%
13 To mitigate future litigation by investors who claim the offer price was too high	1.89	0.00%

Table 40 – Actual observed level of underpricing

Means are based on a five-point Likert scale with anchors of 1= not important to 5=very important. The sample consists of 30 completed surveys of listed companies whose shares were listed in the Cyprus Stock Exchange over the period 1997-2004.

Survey responses to the Question:**To what extent do you feel the following led to the actual level of underpricing observed in your company's IPO?**

	Mean	% 4-5
1 Underwriters underprice to incur the favour of institutional investors	3.00	42.11%
2 To ensure a wide-base of owners	2.95	36.84%
3 To increase the after-issue trading volume of the stock	2.84	26.32%
4 To increase publicity on the opening day	2.74	31.58%
5 To compensate investors for taking the risk of the IPO	2.68	26.32%
6 To compensate investors for truthfully revealing the price they are willing to pay	2.58	10.53%
7 So underwriters can make flipping possible	2.53	5.26%
8 So underwriters can make spinning possible	2.32	0.00%
9 To increase share price by starting a cascade effect amongst investors	2.26	10.53%
10 To create a large block-holder to serve as a watchdog over company management	2.16	5.26%
11 Underpricing reduces the need for additional IPO marketing costs	2.11	10.53%
12 Insiders are willing to underprice because the IPO creates personal wealth	2.11	5.26%
13 To mitigate future litigation by investors who claim the offer price was too high	1.89	10.53%

Table 41 – Signalling

Means are based on a five-point Likert scale with anchors of 1= not important to 5=very important. The sample consists of 30 completed surveys of listed companies whose shares were listed in the Cyprus Stock Exchange over the period 1997-2004.

Survey responses to the Question:

What type of signal do the following actions convey to investors regarding the value of a firm going public?

	Mean	% 4-5
1 Having strong historical earnings	4.70	100.00%
2 Insiders commit to a long lock-up	4.20	80.00%
3 Using a top investment bank as underwriter and manager of the IPO	4.17	86.67%
4 Using a big-5 accounting firm	3.93	66.67%
5 A large first-day share price jump	3.70	66.67%
6 Issuing free warrants	3.53	53.33%
7 Having venture capital (VC) backing	3.43	50.00%
8 Selling a large portion of the firm in the IPO	2.40	16.67%
9 Selling insider shares in the IPO	1.93	10.00%

Table 42 – IPO Process Issues

Means are based on a five-point Likert scale with anchors of 1= not important to 5=very important. The sample consists of 30 completed surveys of listed companies whose shares were listed in the Cyprus Stock Exchange over the period 1997-2004.

Survey responses to the Question:

From your perspective, how important were the following IPO process issues?

	Mean	% 4-5
1 The need to carry out financial and legal due diligence	3.87	66.7%
2 Placing shares privately before doing an IPO	3.47	46.7%
3 An offering which includes free warrants alongside the shares issued	3.20	46.7%
4 The threat of accusations pertaining to window-dressing in the prospectus	3.20	43.3%

Table 43 – Other IPO Issues

Means are based on a five-point Likert scale with anchors of 1= not important to 5=very important. The sample consists of 30 completed surveys of listed companies whose shares were listed in the Cyprus Stock Exchange over the period 1997-2004.

Survey responses to the Question:**What type of signal do the following actions convey to investors regarding the value of a firm going public?**

	Mean	% 4-5
1 Desire to maintain decision-making control	3.80	66.67%
2 Bad market/industry conditions	3.37	46.67%
3 To avoid ownership dilution	3.30	46.67%
4 Disclosing information to competitors	3.20	43.33%
5 Costs/fees of an IPO	3.07	43.33%
6 The Cyprus Stock Market authorities reporting requirements	3.07	30.00%
7 Low price of our share	2.93	20.00%
8 We, as a company, have already enough capital	2.87	16.67%
9 Directors' liability	2.77	26.67%
10 To avoid earnings per share (EPS) dilution	2.70	23.33%
11 We would prefer to be acquired by another firm (rather than list our shares)	2.13	10.00%

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