Three Essays on Equity Financing in the UK

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Abstract

This thesis consists of three essays on equity financing by UK firms, focusing primarily on Private Placement (PPs). PPs have dominated the Seasoned Equity Offering (SEO) landscape in the UK since 2000, whereas Rights Issues had done so previously. While the SEOs have traditionally been the preserve of large firms, in the UK, this has changed in the past decade. The Alternative Investment Market (AIM), with light touch, self-regulated equity market provisions has been the facilitating factor. Since firms issuing PPs are often financially constrained, it is puzzling that institutional investors participate.

Chapter 2 provides an answer to this puzzle by investigating the misvaluation, growth prospects, underpricing and use of proceeds of PP firms. Results show that firms engaging in PPs are undervalued, belong to undervalued sectors and have higher growth prospects than firms making public offers. These aspects and deep discounts make them attractive to sophisticated investors despite being resource constrained. Short run undervaluation is associated with significant post-issue increases in total assets and capital expenditures whilst growth prospects positively impact R&D.

In Chapter 3 short and long term market reactions are evaluated. The market reaction to private placements is nearly 3% as measured by cumulative abnormal returns five days around the issue date. The long term reaction, measured by buy-and-hold abnormal returns over three years post-issue, is insignificant.

Chapter 4 investigates the impact on leverage of frequent equity issuers. We find 65% of UK firms have repeatedly issued equity during 1995-2015 and have higher leverage ratios than single issuers, implying that proceeds are not used to reduce debt. There is no significant difference in the cash flow sensitivity of debt and cash holdings between multiple and single issuers. Differences appear when we take into consideration the market the firm is listed (AIM versus main market).

Keywords: Private Placements, Seasoned Equity Offerings, Misvaluation, Growth, Proceeds, Discounting, Mispricing, Alternative Investment Market, Small Medium Enterprises, Multiple equity issues, Capital Structure, Debt Capacity.

JEL classification: G10, G14, G31, G32

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List of acronyms and abbreviations

AR_{it}	Abnormal Return of firm i on day t.
$CSAR_i^L$	Cumulative Standardised Abnormal Return for firm i over L days
SAR_{it}	Standardised Abnormal Return of firm i on day t.
2SLS	Two Stage Least Squares
3SLS	Three Stage Least Squares
AAR	Average Abnormal Returns
ACQ	Acquisitions
Adj.R^2	Adjusted R-squared
AIM	Alternative Investment Market
B	Book value of the firm's equity
b	Logarithm of the book value of the firm's equity
BHAR	Buy and Hold Abnormal Returns
BMP	Statistic suggested by Boehmer, Musumeci and Poulsen (1994)
bn	billions
CAPEX	Capital Expenditure
CAR	Cumulative Abnormal Returns
D	Discounting, calculated following Altinkilic and Hansen (2003)
DISC	Discounting, calculated following Hertzel and Smith (1993)
EBIT	Earnings Before Interest and Tax
EU	European Union
FCA	Financial Conduct Authority
FO	Follow On SEOs
FSA	Financial Services Authority
FSE	Firm Specific Error
FTSE ALL	Financial Times - Stock Exchange All Share Index
GDP	Gross Domestic Product
General Corp.	General Corporate Purposes
GMM	Generalized Method of Moments
INV	Inventory
IPO	Initial Public Offering
Lev	Leverage

Ln, Logs	Natural Logarithm
LRVTB	Long Run Value To Book
LTRD	Long Term Reduction in Debt
m	Logarithm of the market value of the firm's equity
M	Market value of the firm's equity
M&A	Mergers and Acquisitions
M/B, MTB	Market to Book Ratio (Market Value divided by Book Value)
Max	Maximum
mil	millions
Min	Minimum
MM	Main Market
NASDAQ	National Association of Securities Dealers Automated Quotations
ni	Logarithm of Net Income
NOMAD	Nominated Advisor
NPV	Net Present Value
OLS	Ordinary Least Squares Regression
OO	Open Offers
OTCBB	Over The Counter Bulletin Boards
OTHER CAP	Other Capital - Non-equity capital raised
PIPE	Private Investment in Public Equity
PP	Private Placement
PRIM CAP	Primary Capital - Equity capital raised
PT	Prospect Theory
R	Return on the offer day, following Altinkilic and Hansen (2003)
R&D	Research and Development
Rel. Leverage	Relative Leverage
RI	Rights Issues
RKRV	Rhodes-Kropf, Robinson and Viswanathan (2005)
ROA	Return On Assets
ROE	Return On Equity
SA	Size-Age Index
SEC	Securities and Exchange Commission
SEDOL	Stock Exchange Daily Official List

SEO	Seasoned Equity Offering
SIC	Standard Industrial Classification
SME	Small and Medium Enterprises
TA	Total Assets
t-diff	t value of a difference in means test
TSSE	Time Series Sector Error
U	Underpricing, calculated following Altinkilic and Hansen (2003)
UK	United Kingdom
US	United States of America
V	Fundamental value of the firm's equity
v	Logarithm of the fundamental value of the firm's equity
Δ	Delta (label for change)
χ-diff	Probabilities of χ-squared, non-parametric test of equality of medians

Chapter 1. Introduction

It is widely accepted that small and medium enterprises (SMEs)[1] in the United Kingdom tend to rely mainly on internal funds and partly on bank lending channels rather than market equity channels for their external financing needs (Brav 2009; Cosh, Cumming and Hughes 2009). They have been confronted, however, with a funding gap in the wake of the 2007-08 financial crisis that restricted this channel. The UK banking crisis commenced with the run on Northern Rock deposits in September 2007 and deteriorated following the collapse of Lehman Brothers in September 2008. The crisis had a direct effect on bank lending to SMEs. The Basel Committee on Banking Supervision published the first version of Basel III in late 2009, giving banks three years to satisfy tighter prudential capital requirements and new leverage ratios. Banks responded in two ways: they had, firstly, increased their margin over base rate for lending, to reflect increased risks and secondly, attempted to shrink the loan portfolios on their balance sheets to meet their increased capital requirements. The cumulative effect was that bank lending to SMEs fell and the interest rate cost of loans rose. The marked shift in the external financing landscape for SMEs over the past decade has been described as the SME funding gap. It is a friction in the bank funding channel.[2]

Meanwhile, such financing frictions need not apply to companies that are listed on a

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1 We restrict our attention to publicly listed SMEs to ensure we have reasonable measures of equity misvaluation. While this restriction ensures suitable measures of misvaluation, since the vast majority of SME are private unlisted firms, our study is not representative of SMEs in general. Conclusions from this study can be inferred for only the population of publicly listed SMEs.

2 The choice of UK economy for analyzing the financing choices of SMEs is due to the availability of a larger sample of SMEs being listed on the London Stock Exchange, than in the Exchanges of other countries. Furthermore, the data reported for the UK firms are more extensive, sufficiently detailed and reliable for a large scale study. These two factors facilitate the empirical analysis.

stock exchange since they should have ready access, via Seasoned Equity Offerings (SEO), to the equity channel when in need of fresh outside capital. They have several options for raising equity finance. Equity can be raised through secondary or seasoned equity offerings. In this case, companies that have already made their initial public offering (IPO), issue more equity in the markets either publicly or privately. There are three main types of SEOs: Rights Issues (RIs), Open Offers (OOs) and Private Placements (PPs). While Rights Issues used to be the most common type of equity issuances in the UK, Private Placements have dominated more recently. In Rights Issues, the new shares are firstly offered to the existing shareholders in proportion to their prevailing holdings in the company. Shareholders are given the choice (i.e. a "right") to purchase additional equity at a discount, to protect their ownership stake from being diluted. Shareholders have the choice of selling their rights by trading them the same way as common shares in the market. In Open Offers, the new shares are offered to the investing public including existing shareholders. However, existing shareholders do not have any special privileges or rights in this instance (Armitage, 1998). In the case of Private Placements, shares are issued privately to specific groups of investors, usually investment banks or institutions.

There are frictions in the equity channel too and one way they can manifest is via unequal access to information among the market participants. The level of information asymmetry among potential market players, differ among Rights Issues, Open Offers and Private Placements. Existing investors and/or the general public may not have the time and resources to estimate the true or fundamental value of a company issuing equity. Thus, managers of the company may know more about the fundamental value of the company on and around the equity issuing date compared

to outside investors. As a result, managers will have strong incentives to conduct SEOs when the equity is overvalued and hence seek to raise money cheaply.

However, this cannot be easily sustained in the case of Private Placements (PPs) of equity. In PPs, the counterparty (i.e. sophisticated institutional investors) can be reasonably thought to have the necessary resources and sufficient knowledge to accurately estimate the fundamental value of most companies approaching them to place its equity with them. This practically means that if a firm with overvalued equity approaches them to place their equity with them, the offer will quite likely be turned down. The level of information asymmetry in the case of Private Placements is far less compared to public issues of equity also because institutions can require more detailed private disclosure than is possible in a public prospectus.

We investigate the information asymmetry dimension by evaluating the differences in misvaluation, growth and discounting across several different firm and deal characteristics. We compare Private Placement where the information asymmetry is lesser, stemming from likely private disclosures with other types of SEOs such as Rights Issues (RIs) and Open Offers (OOs) where the information asymmetry is higher stemming from the public nature of RIs and OOs. We also investigate the information asymmetry dimension by evaluating the effects of misvaluation, growth and discounting on the use of proceeds raised in SEOs.

Although studying the features of SEOs from the perspective of firm and deal characteristics helps throw light on the types of firms involved and on the impact of information asymmetry as above, a different perspective is secured by evaluating the response of the stock market to the issuing of equity by firms. To this end, we estimate the Cumulative Abnormal Returns (CARs), around the issue date, as a

measure of the short term response of the stock market. For the longer term performance of SEOs, we estimate Buy and Hold Abnormal Returns (BHAR) around the issue date, up to three years prior and three years following. We investigate the performance effects for SMEs, PPs and for those SMEs that issue PPs.

Short-term negative reactions of the stock market and long term underperformance of the stock price following SEOs is well established in the extant literature. We investigate these two results along two avenues. First, we test for differences in CARs for different subsets of SEOs, especially focusing on PPs where we anticipate both a certification effect, that a financial institution was willing to supply expensive equity, as well as the effect of the reduced information asymmetry of PPs. Second, we test for differences in BHAR. However, we amend the testing approach for BHAR as employed by most recent prior studies.

We amend the conventional testing approach in two ways. First, Andrade et al. (2000) report that, while prior studies on long term performance of SEOs typically report large and significant underperformance, a close examination of their testing apparatus shows that they have typically employed the assumption that returns of firms are not correlated. Hence, prior tests appear to be settling for a simplified approach that sums the variance terms alone, ignoring the covariance terms. For comparison purposes, as in prior studies, we estimate BHAR assuming returns of different firms issuing SEOs are independent and hence not correlated. This is highly unlikely to be so since SEOs and other corporate events tend to occur in clusters both in time and across sectors, suggesting non-zero correlations are the default than the exception.

Following, Andrade et al. (2000), we also report adjusted test statistics that apply a

correction factor that approximates the covariance terms by employing the average correlation in the sample of SEOs. We also develop new and separate test statistic, where the full variance-covariance matrix is computed and the actual portfolio variance is estimated rather than approximated from the average correlation. While we can replicate the prior results of significant long term underperformance following SEOs, we find no significant long term underperformance following SEOs when we employ either the adjusted test statistic with the Andrade et al. (2001) correction factor or the actual portfolio variance.

We study differences in CARs between SEOs on the AIM and Main Market (MM), since the AIM is a privately regulated exchange with light regulatory burden while the MM is fully regulated exchange with a heavy regulatory and compliance burdens. We further investigate differences in CARs between the first SEOs and follow-on SEOs, since the response of the market to the initial raising of equity after an IPO can be expected to differ from later SEOs where the information asymmetry has likely been reduced. Similarly, following the earlier thread, we test for differences between firms with high versus low misvaluation, high versus low growth options, as well as high versus low discounting.

Long term performance, measured using BHAR and the tests of differences between various groups, follow a similar structure to that for short term market reaction employing CARs.

While conventional reasons for firms raising equity finance have revolved around the exercise of growth options, firms may, quite rightly, direct fresh equity to reduce their leverage. Prior studies on SEO have focused on the performance related aspects associated with the raising of equity finance but have largely ignored the obvious

effect that equity must have on leverage. This is even more surprising when it seems that the capital structure literature has also not extensively investigated the phenomenon of multiple equity issuers. We investigate this dimension.

Firms adopt a number of approaches to seek funding when they need money to either fund their projects and operations or reduce their debt. One of the available means of accessing financing is equity issuance. After their initial public offering (IPO), firms may return to the markets to raise additional equity to fund their needs. These SEO transactions can be either public or private. Prior literature has extensively explored these deals from many perspectives (stock liquidity, profitability, performance etc.) and how markets perceive them (see for example D'Mello et al. (2003), Iqbal (2008), Iqbal et al. (2013), and Walker et al. (2016)). In this study, we investigate the relationship between the frequency of equity issuances and a firm's debt structure. We investigate whether the raising of additional funds is associated with reduction of existing debt. Specifically, we examine to what extent multiple equity issuance affects firm leverage ratios. We further analyze whether there is a difference in cash and debt management policies between multiple equity issuers and single equity issuers.

Primary investigations

To sum up, we investigate three dimensions associated with the raising of equity finance via Private Placements (PPs) by listed firms in the UK. We evaluate the

i) impact of growth prospects, misvaluation and mispricing on the different uses of proceeds raised via Private Placements and other means.

ii) differential stock market reactions in the short (CARs) and long term (BHARs) to Private Placements. In addition to growth and misvaluation,

we investigate the effect of markets and level of discounting for those firms that raise equity multiple times, the difference between the first and the follow on SEOs.

iii) impact on the capital structure of those firms that raise finance in multiple SEO events while paying specific attention to the sensitivity of the debt level following an infusion of new cash.

Empirical Findings

Our main empirical findings are that for firms raising finance via PPs, misvaluation significantly increases the use of proceeds towards subsequent purchase of assets while growth has a similar effect only on R&D. The reaction of the stock market in the short term is positive for PPs, though we find no evidence of long term under-performance. While there is a general preference to increase cash holdings using proceeds from SEOs, we find some differences. Multiple issuers listed on AIM change their cash holdings when there is an increase in cash flow, while issuers listed on the main market (MM) direct proceeds towards increasing cash holdings as well reducing their debt. Constrained firms issuing equity multiple times appear to prefer to reduce debt. Both constrained and unconstrained firms, multiple and single issuers, change their cash holding positions when there is an increase in cash flow.

More detailed empirical results show that undervaluation is the main driver of post-issue activity by UK PP issuers over the 1994-2014 period. Misvaluation is associated with significant post-issue increases in total assets, capital expenditures for companies placing their equity privately. By contrast, long run growth prospects have a significant impact on R&D for PP firms. These results suggest that undervaluation induces PP firms to invest in long run projects to move towards their

long run optimal investment levels. The prominent role of misvaluation in impacting long run investment is broadly consistent with the results found in the literature.

The market reaction to Private Placements is nearly 3%, as measured by cumulative abnormal returns in five days around the issue date while the long term reaction measured by buy and hold abnormal returns over three years post-issue is insignificant. Regarding the impact of multiple (single) SEOs on leverage, our results show that both multiple and single equity issuers tend to increase their cash holdings when there is an increase in the cash flow. Our findings further show that, for multiple equity issuers, there is a propensity to change their debt positions when there is an increase in cash flow.

We find that AIM firms tend to increase their cash holding when there is an increase in cash flow. Firms listed on MM, particularly for single equity issuers, change both their debt and cash holding positions when there is a change in cash flow.

We find that multiple and single equity issuers, both constrained and unconstrained, increase their cash holdings when cash flow increases. However, only constrained multiple issuers change their debt positions when there is a cash flow change.

Contributions

The thesis makes six contributions. The **first** contribution, in Chapter 2, is that we extend and specialise the misvaluation approach for SEOs to the case of PPs. The rationale is that generous discounts on PPs could more than cancel overvaluation. If firms are undervalued, then PPs enable sophisticated investors to acquire such firms' shares cheaply and even more cheaply if a discount is further applied to their underpriced shares.

The other aspect of misvaluation is its long run post-issue impact on the use of

proceeds by PP firms. The extant evidence on this is that misvaluation plays virtually no role in influencing the use of proceeds by traditional SEO firms.[3] The **second** contribution, also in Chapter 2, is that we establish undervaluation as the main driver of the post-issue use of proceeds for changes in assets and capital expenditures by PP firms. The rationale here is that expensive equity capital stemming from undervaluation induces firms to make rational long-term investment choices.

The third and fourth contributions are contained in Chapter 3. The **third** contribution is that new light is shed on the role of external equity financing in mitigating the funding gap that SMEs have historically experienced in the UK. We argue that the equity markets have played a leading role in the funding of SMEs and highlight the role of the Alternative Investment Market (AIM).[4] We find that while the conventional thinking in the literature suggests SMEs have relied mainly on bank lending channels for their external financing needs and SEOs have been the remit of large companies, our findings suggest that the AIM equity channel was in fact prominent in smoothing out the financing frictions in the bank lending channels. The vast majority of the post-2007 SEOs have involved SMEs that listed on AIM not the Main Market. Furthermore, we show that listed SMEs accounted for 66% of all Secondary Equity Offerings (SEO) over the course of our sample period and for 82% of AIM SEOs.

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[3] Hertzel and Li (2010) explore US SEOs only in this context without distinguishing between public issues and private placements. The presumption is that their sample mainly comprises public SEOs.

[4] Although AIM was established as recently as 1995, it is a Recognised Investment Exchange under the Financial Services and Markets Act 2000 that created the Financial Services Authority (FSA) as a regulator. It has enjoyed a meteoric rise to dominance in London where it accounts for 70% of al SEOs over the sample period. AIM distinguishes itself from London's traditional Main Market and indeed from other international markets by its minimal list requirements and by its light touch regulatory approach. The later approach to regulation has enjoyed a long tradition within the City of London as witnessed by the rise of the euro-banking markets in the 1970s.

The **fourth** contribution is the argument that PPs offer a solution to the potential information asymmetry and moral hazard issues associated with SEOs on AIM.[5] We have several reasons for reaching this argument. The degree of information asymmetry is likely higher for investors in AIM than the Main Market as the AIM, is a platform enabling young small firms with new technologies to raise finance. This raises the question: why do investors choose to buy stocks of firms listed on lightly regulated exchanges such as AIM?

Our first rationale is that sophisticated investors (including institutions) have the wherewithal to conduct due diligence on SMEs prior to investing in their PPs but this is not the case with retail investors. The second rationale is that the valuation of AIM firms, and SMEs in particular, is seen as suffering from major information asymmetry problems. One important aspect relates to disentangling the growth prospects of such firms and their potential misvaluation. SMEs are rightly thought to pose challenges to valuation even though they can offer potentially high long run growth prospects. Prior research on SEOs has not effectively disentangled the two, since a suitable valuation approach was not been widely available. In this light, we employ the valuation approach of Rhodes-Kropf et al. (2005) to disentangle estimates of long-run growth prospects from possible misvaluation effects. Our results indicate that AIM SMEs that place their equity privately with financial institutions, on average enjoy very high growth prospects. Finally, since our findings show that SMEs offer their shares at a discount to their market price by leaving money on the table, we

[5] The majority (83%) of SEOs have taken the form of private placements (PPs) where tranches of new shares are placed with financial institutions and other sophisticated investors. Traditionally, most UK SEOs had taken the format of open offers or rights offers. SMEs account for 82% of the PPs on AIM.

argue that the underpricing[6] seeks to compensate investors for the adverse selection costs they bear. Moreover, since the market price of SMEs engaging in PPs is below their fundamental value (estimated from the valuation approach noted above), it will be a further incentive for sophisticated investors since they obtain a double discount when they invest in such placements. Taken together, we argue that the choice of PPs as an issuing device resolves adverse selection and agency problems faced by SMEs on AIM. In the light of the misvaluation and mispricing characteristics of different groups of firms issuing equity in the UK, we further investigate the market reaction, in the short- and long-run, to issuance of equity.

As regards capital structure effects of multiple SEOs our **fifth** and **sixth** contributions (Chapter 4) add to two strands of the literature. First, they broadly add to the SEO literature. It particularly focuses on a sample of multiple equity issuers that has not gained much of attention from previous studies. Second, our study is related to the capital structure literature by looking at the capital structure characteristics, the debt and cash management policies of multiple equity issuers versus single equity issuers.

We find new evidence multiple issuers maintain higher debt levels than one-off issuers do, a pattern seen among firms on the main market and AIM. When additional cash becomes available, firms exhibit clear differences in their preferences between changing their debt or cash holdings. We find differences between MM and AIM firms in how they employ new infusions of equity. While firms on the MM change their debt and cash positions when cash flow increases, AIM issuers focus on changing their cash holdings.

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6 A firm is underpriced when the offer price is lower than the market price of the firm. Similarly, a firm is overpriced when the offer price is higher than the market price of the firm. Some studies on mispricing (underpricing or overpricing), compare the offer price with the market price on and/or around the issue date. Thus, the actual degree of mispricing is a matter of choice of the date the market price is taken.

The rest of the thesis proceeds as follows: chapter two investigates the use of proceeds by firms raising equity in SEOs. The focus is the effect of misvaluation, growth and underpricing (due to discounting) on the use of proceeds. The reaction of the stock market in the short term around the issue date and over long term horizons up to three years relative to the issue date are studied in chapter three. The raising of equity undoubtedly alters the capital structure of a firm and in chapter four we investigate the effects on leverage of those firms that issue multiple times. Chapter 5 concludes the thesis.

Chapter 2. A misvaluation approach to private placements

2.1 Introduction

In recent years firms have increasingly employed private placements (PPs) - the sale of blocks of shares to sophisticated private investors – as their preferred form of seasoned equity offerings (SEO). The PIPE (private investment in public equity) market has become popular in the US as has the PP market in the UK. The main difference between the two is that PPs entail resale restrictions on investors of up to two years after purchase whereas PIPEs can be traded much sooner.[7] Since both allow firms to issue their equity privately to specific groups of sophisticated investors, such as institutional investors or mutual funds, they involve substantially less burden in terms of costs of preparation and distribution of the mandatory prospectus, unlike in the case of public issues which are more expensive.

The question of why firms choose PPs over traditional SEOs has been considered in the literature. Chen, Dai and Scatzberg (2010) identify three motives for why firms choose PIPEs. First, firms choose PIPEs as a last resort if they are denied funds in the traditional SEO market due to information asymmetry or poor performance. Second, issuers choose PIPEs in bear markets when their stock is undervalued, in the hope that institutional investors' certification effect may reduce the undervaluation (Hertzel and Smith, 1993). Finally, firms opt for PIPEs due to their lower issuance costs. Chakraborty and Gantchev (2013) suggest that firms employing PPs are often troubled firms. The attraction of institutional investors to those issues poses a

[7] See Chen, Dai and Schatzberg (2010) on the difference between PIPEs and traditional PPs. See also Armitage (2011).

puzzle.[8]. These reasons for firms choosing PPs seem to attribute an undue degree of altruism to investors in riding to the rescue of such firms. Barclay, Holderness and Sheehan (2007) depart from the standard literature in proposing managerial entrenchment as an alternative explanation for PPs. They argue that PPs to passive investors help to solidify the control over the firm by prevailing management teams.

The literature has established that misvaluation or short run mispricing plays a key role in explaining the motives for traditional SEOs. In particular, it is generally accepted that SEO firms time the market to take advantage of temporary windows of overvaluation in raising additional equity capital cheaply as suggested by Hertzel and Li (2010) for the US. A fortiori, overvaluation would not appear to provide a motive for sophisticated investors to participate in PPs as they would be able to value these firms and hence be reluctant to overpay for the shares. The chapter's first contribution is that it extends and specialises the misvaluation approach of SEOs to an undervaluation argument relating to PPs. The rationale is that generous discounts on PPs could more than cancel overvaluation. If firms are undervalued, then PPs enable sophisticated investors to acquire such firms' shares cheaply. This attraction is enhanced when a discount is applied to the undervalued shares.

Our undervaluation approach to PP employs the methodology developed by Rhodes-Kropf, Robinson, and Viswanathan (2005) (RKRV hereafter).[9] The cornerstone of the RKRV approach is a decomposition of the market-to-book ratio (M/B) into misvaluation and growth components. The former includes firm-specific error or

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8 This is borne out by the fact that the number of PPs in the UK increased sharply since the financial crisis and accompanying recession.

9 While they give misvaluation a rational interpretation based on correlated misinformation, one could equally view their approach from a behavioural perspective as in Shleifer and Vishny (2003) and Dong, Hirshleifer, Richardson, Teoh (2006). We remain agnostic about the causes of misvaluation.

short term misvaluation and long run industry misvaluation.

We argue that that PP firms are undervalued at both the firm and industry level at the time of issue. This is pivotal in making them attractive to sophisticated investors. Since our PP sample mainly consists of small firms and they tend to have high growth prospects, these PPs are an attraction for sophisticated investors.

Our results from a sample of 2,376 PP events in the UK over the 1994-2014 period show that the issuing firms in PPs are on average undervalued and belong to undervalued sectors or industries. Thus, our misvaluation hypothesis posits that PPs are attractive to institutional investors precisely because they are undervalued. The fact that PPs are typically offered at a substantial discount (over 10%) to their already undervalued prices provides a further incentive to investors. This is a novel insight into PPs and contrasts sharply with the typically overvalued firms involved in traditional SEO deals. Moreover, PP firms also offer better growth prospects than do firms employing standard SEOs. Enhanced growth prospects offer a further justification for sophisticated private investors choosing to participate in PPs.

The other aspect of misvaluation is its long run post-issue impact on the use of proceeds by PP firms. The extant evidence on this is that misvaluation plays virtually no role in influencing the use of proceeds by traditional SEO firms.[10] The chapter's second contribution is that it establishes that undervaluation is the main driver of the post-issue use of proceeds for changes in assets and capital expenditures by PP firms. The rationale here is that expensive equity capital stemming from undervaluation induces firms to make rational long-term investment choices. The

[10] Hertzel and Li (2010) explore US SEOs only in this context without distinguishing between public issues and private placements. The presumption is that their sample mainly comprises public SEOs.

empirical results show that undervaluation is the main driver of the use of proceeds by issuers of new equity through PPs. Misvaluation is associated with significant post-issue increases in total assets, capital expenditures but not for R&D among companies placing their equity privately. By contrast, long run growth prospects have a significant impact on R&D mainly among firms engaging in PPs but partially for others (Rights Issues and Open Offers). These results suggest that undervaluation induces PP firms to perhaps invest in long run projects so as to move towards their long run optimal investment levels. The prominent role of misvaluation in impacting long run investment is broadly consistent with the results found by Alzahrani and Rao (2014) for a very large sample of US firms 1970-2012 on the mispricing-investment relationship. They find that investment is linked to mispricing, through market timing, and to growth. The effect is more pronounced among financially constrained firms. They further establish that the mispricing-investment relationship holds for both undervaluation and overvaluation

Hertzel and Li (2010) also investigate US SEOs and, similar to our study employ the RKRV methodology to distinguish between misvaluation and long run growth prospects. While our sample comprises UK PPs up to 2014, their sample most likely[11] is made up of traditional US SEOs up to 2004. They find that growth prospects are the main driver of the post-issue use of proceeds, and that misvaluation is significant for capital expenditures but growth is insignificant.

We further investigate whether misvaluation and growth play different roles in the use of proceeds pre- as compared to post-financial crisis. Estimating the same use of

[11] They do not disclose the composition of their sample.

proceeds models pre- (1994-2007) and post-crisis (2008-2014)[12], we find that, prior to the financial crisis, growth prospects play a significant role in changes in capital expenditure and R&D while misvaluation is the main post-crisis driver of the results.

2.2 Literature review and hypotheses

2.2.1 The SEO decision

The level of information asymmetry between different types of SEOs (Private Placements (PPs), Rights Issues and Open Offers) is different. Existing and outside investors may not have the time and resources to estimate the true or fundamental value of a company issuing equity using Rights Issues or Open Offers. The important point is that firm managers know more about the firm's fundamental value on and around the equity issuing date compared to investors. As a result, managers have strong incentives to conduct SEOs when the equity is overvalued and raise external capital cheaply. However, this cannot be sustained that easily in case of PPs of equity. The counterparty here (sophisticated, institutional investors) has all the necessary resources and sufficient knowledge to accurately estimate the fundamental value of a firm approaching them to place its equity. In practice this means that if an overvalued firm approaches them to place its equity, most likely the offer will be turned down. The level of information asymmetry in the case of Private Placements is far less compared to public issues of equity.

This different level of information asymmetry is one of the main reasons behind the differences in performance of companies issuing equity publicly versus firms choosing the PP route and this is well documented in the literature (Hansen and

[12] The sample period stops in 2014. This is to allow having full three years ahead (2015, 2016 and 2017) for the analysis of the use of proceeds of the issuing firms.

Crutchley (1990), Jung et al. (1996)) as well as during the post-deal period (Marsh (1979), Levis (1995), Loughran and Ritter (1995), Spiess and Affleck-Graves (1995), Loughran and Ritter (1997), Ngatuni et al (2007), Andrikopoulos (2009), DeAngelo et al (2010)). The extant literature reports several explanations behind market reactions to SEOs. These include the exploitation of windows of opportunity by managers, information asymmetries and adverse selection problems, managerial overconfidence and empire building, deterioration in operating fundamentals and/or earnings that drive the overall performance of the issuing company, investors' over-reaction, monitoring, certification and ownership structure hypotheses. These have been proposed as potential drivers of results reporting stock price underperformance in announcement and the aftermath of the SEOs and positive performance around PP announcements.

When firms decide to issue equity publicly, their managers have more information about their firm than the general public due to information asymmetry. Thus, they can decide to issue equity when the firm's equity is overvalued, as confirmed by Loughran and Ritter (1997) SEOs in the US. The firms stand to raise more money from the market with fewer shares. This is not always obvious to the general average retail investors who, without access to the same level of information as the managers of the company, are not likely to value the company suitably accurately.

By contrast, when a company places its equity directly with institutional or other sophisticated investors, a priori one would not expect that overvalued equity would be readily acceptable to them. Institutional investors perform due diligence to obtain information about the issuing company before the deal is closed and also are better able to assess the true value of the issuer compared to the typical retail investor.

Thus, we would not expect to see overvalued equity to be placed privately with groups of sophisticated investors. A fortiori, this is a challenge for misvaluation theories that rely on firms being able to sell overvalued shares. We propose to explain this puzzle by allowing for the possibility of a combination of misvaluation, high growth prospects and discounting.

High growth prospects act as a motive for all (including institutional) investors in the decision to invest in SEOs in general and in PP deals in particular. There are cases where companies have positive Net Present Value (NPV) projects to invest in and thus they need to raise financing to proceed with their investment plans. When issuing to general retail investors is not a viable option, PPs can act as a solution of last resort for companies in need for equity. While it is common in conventional approaches to SEOs to take the market-to-book (M/B) ratio of issuers as a proxy of their growth prospects, the M/B has been shown to comprise two opposing components which make it highly error prone as a measure of growth. Rhodes-Kropf et al. (RKRV) (2005) decompose the M/B ratio into misvaluation and growth components. Taking into account the prior literature on SEOs and also the RKRV decomposition of M/B ratio, we form our first set of hypotheses which are:

H1: SEOs firms are misvalued.

H2: SEOs firms have high growth prospects.

H3: PP firms are undervalued while public SEO firms are overvalued.

H4: PP firms have higher growth prospects than do public SEO firms

Another well-documented result in the literature is the underpricing of shares in the case of IPOs and SEOs. In other words, the new shares in both IPOs and SEOs are sold at a discount relative to their market price, thus "leaving money on the table (see for

example Beatty and Ritter (1986), Hanley (1993), Habib and Ljungqvist (2001), Bradley and Jordan (2002), Loughran and Ritter (2002), Purnanandam and Swaminathan (2004) , Lee and Wahal (2004) , Loughran and Ritter (2004)).

The question that arises here is why firms are willing to leave money on the table when they issue equity for the first time (IPOs) as well as in subsequent equity issues (SEOs). Loughran and Ritter (2002) develop a prospect theory model to explain why issuers in IPOs do not get upset when leaving large amount of money on the table. They provide evidence that the IPOs leaving more money on the table are those where both the offer price and market price are higher than expected. In this case, shareholders of the IPO firm incur a loss due to money left on the table but at the same time do not get upset since they see the value of their retained shares increasing. Money left on the table can be considered a form of compensation for underwriters, in addition to the direct fees paid by issuing firms. Another attempt to explain why firms are not upset about leaving money on the table is provided by Derrien (2005). He constructs and empirically tests a model for IPO pricing and shows that when a book-building mechanism is used in the IPO process, the shares provided are on average overpriced. The model takes into consideration both the intrinsic value of the firm and the sentiment of noise traders and provides evidence that IPO companies are not the only ones leaving money on the table in an IPO. The investors who are willing to buy the firm's shares in the aftermarket may also leave some money on the table. Thus, companies conducting IPOs in "hot" markets, when investors sentiment is bullish, are not that upset leaving some money on the table since they are aware of the fact that at the time of the offering their shares are overpriced.

The idea behind underpricing is similar for subsequent equity issues (SEOs). Altinkilic and Hansen (2003) find that expected discounting in SEOs is used to compensate investors for the prevailing uncertainty about the value of the issuing firm and to cover placement costs. Their findings provide no evidence that discounting is used by managers to signal that their firm is undervalued. In terms of the factors affecting underpricing, Corwin (2003) finds that underpricing is higher the higher the price uncertainty is and reflects temporary price pressure caused by the distribution of large blocks of shares. In addition, he finds a positive relationship between SEO and IPO underpricing implying that part of the SEO underpricing, which increases throughout the years examined in the study, can be explained by changes in the underwriting business.

A striking feature of PPs is that shares are placed at a relatively deep discount in relation to the market price. Hetzel and Smith (1993), in their study on PPs find that discounts reflect the costs that private investors incur to estimate the true or fundamental value of the firm. Also, regarding the positive abnormal returns observed around the placement, they find evidence that they reflect favourable inside information about the issuing firm. This background literature on PP discounts leads to the following hypothesis:

H5: SEO shares are offered at a discount.

H6: PP shares are offered at a deeper discount than are other SEO issues.

2.2.2 Post-issue use of proceeds

Apart from the method the company uses to raise equity financing (privately,

publicly or a combination of the two), what is also important is how the firm uses the money raised. Companies need to disclose information on the intended uses of proceeds to be raised. In the case of public equity issues this information is disclosed in the prospectus. Prior studies on the uses of equity proceeds employ two approaches: they either focus on the intended uses of proceeds (information disclosed in the prospectus) or they try to measure the post-SEO uses of proceeds.

Autore et al. (2009) explore the link between the intended use of proceeds and the long-run performance of US SEO companies. Using a sample of 880 firms conducting SEOs during the period 1997-2003, they find that issuers specifying either recapitalization or general corporate purposes as their intended use of SEO monies tend to underperform in the 3-year period after the deal. However, no significant evidence is found about long-run underperformance of firms stating a specific investment in their SEC filings. The implication of this is that firms issuing equity to invest in projects that could add value and stating their investment plans in their SEC filings are not perceived by the market as more overvalued than firms issuing to reduce their indebtedness. In other words, companies stating their investment plans prior to SEOs send a positive and credible signal to the market about their quality and growth prospects.

Hertzel and Li (2010) use a sample of 4,325 US explore the role of mispricing and growth prospects in the use of proceeds and firms' performance in the aftermath of the SEO deal, deals. Their approach about how they measure the use of proceeds differs from that in Autore et al. (2009). The latter use an ex-ante measure, namely their pre-IPO intended use of proceeds stated by firms in their prospectuses. By contrast, Hertzel and Li (2010), employing the approach of Kim and Weisbach

(2008), use an ex-post measure based on accounting variables that can capture potential uses on proceeds. Hertzel and Li (2010) find that firms with greater misvaluation use the SEO monies to pay down their debt and/or make a stock of cash, while companies with higher growth prospects invest in R&D and capital expenditures. Along the same lines, Silva and Bilinski (2015) study the relation between intended use of proceeds, underwriter quality and long-run performance of SEO firms in the UK. They find similar results to those of Autore et al. (2009) in terms of post-deal issuer abnormal returns.

Drivers of the post-issue use of proceeds by SEOs firms in the US have been studied by Kim and Weisbach (2008) and Hertzel and Li (2010). In the UK, Floros and Sapp (2012) find that firms employing PPs are small, R&D intensive firms that potentially experience financial distress. One interesting question in this context is whether the use of proceeds is driven by misvaluation/undervaluation, by growth prospects or both. While prior literature has studied all SEOs as a homogenous group, we distinguish among those that raise money in PPs as compared to public means (such as Rights Issues and Open Offers). Our extended misvaluation approach suggests two competing hypotheses for public SEO and PP deals. In testing these hypotheses, long term investment is defined as increases in capital expenditures, R&D, and total assets.

H7: The use of proceeds for long term investment by public SEO firms is driven by growth prospects.

H8: The use of proceeds for long term investment by PP firms is driven by undervaluation.

2.3 Methodology and data

2.3.1 Decomposing the market to book ratio

Misvaluation is captured by a comparison between market and fundamental value. Various models have been proposed in the literature for computing the latter. The model employed in this study has been developed by Rhodes-Kropf et al. (RKRV) (2005) and suggests a decomposition of the market-to-book (M/B) ratio into mispricing and growth components. More specifically, the approach disaggregates M/B into (a) firm-specific error (FSE) or short run misvaluation, (b) time-series sector error (TSSE) or long run misvaluation and (c) long-run value to book (LRVTB) components. Note that if there is no misvaluation, then M/B simply captures growth prospects.

To quantify equity issuers' growth prospects and misvaluation, we use a variation of the Rhodes-Kropf et al. (hereafter RKRV) (2005) methodology that suggests a decomposition of the market-to-book (M/B) ratio into long run growth and misvaluation components. Although Rhodes-Kropf et al. (2005) used the approach of M/B ratios decomposition in the context of mergers, several studies have subsequently employed this methodology for various corporate events, such as Yang (2008), Pantzalis and Chul Park (2009), Chi and Gupta (2009), Bauguess et al. (2009), Havakimian and Hutton (2010), DeAngelo et al. (2010), Hertzel and Li (2010), Badertscher (2011), Maksimovic et al. (2013), Fu et al. (2013), Phillips and Zhdanov (2013).

Logged values of M/B are employed to mitigate potential right skewness problems associated with accounting data. The decomposition into three components can thus

be written as follows where lower case letters denote the logged values of M and B:

$$m_{it} - b_{it} = [m_{it} - v(\theta_{it};\alpha_{jt})] + [v(\theta_{it};\alpha_{jt}) - v(\theta_{it};\alpha_{j})] + [v(\theta_{it};\alpha_{j}) - b_{it}] \quad (2.1)$$

In the equation above, m_{it} is the natural logarithm of market value of the firm's equity (M), $v(\theta_{it};\alpha_{jt})$ is the natural logarithm of the short-term fundamental value, while $v(\theta_{it};\alpha_{j})$ is the natural logarithm of the long-run fundamental value of the firm's equity. Finally, b_{it} is the natural logarithm of the book value of the firm's equity (B).

The first component $[m_{it} - v(\theta_{it};\alpha_{jt})]$, or FSE is calculated as the difference between market and the fundamental value conditional on time (t) and sector (j) valuations. The second component $[v(\theta_{it};\alpha_{jt}) - v(\theta_{it};\alpha_{j})]$ or TSSE is the difference between short- and long-run fundamental value. Together, these two components comprise the misvaluation element of the M/B ratio. The last component $[v(\theta_{it};\alpha_{j}) - b_{it}]$ captures the difference between long-run value and the book value is an indicator of long run growth prospects.

RKRV (2005) employ three separate models to provide estimates of fundamental value. Their Model 1 simply regresses market value on a constant and book value:

$$m_{it} = \alpha_{0jt} + \alpha_{1jt} b_{it} + \varepsilon_{it} \quad (2.2)$$

Models 2 and 3 include additional independent variables to add explanatory power. Model 2 includes net income (ni) as well as book value, while Model 3 adds leverage (Lev_{it}). Note that both the absolute Net Income (ni_{it}^{+}) as well as negative values for

Net Income ($(I(<0)ni^{+})_{it}$)[13] are employed in Models 2 and 3. The effects of absolute and negative Net Income values on Market Value are captured by the coefficients α_{2jt} and α_{3jt} respectively.

$$m_{it} = \alpha_{0jt} + \alpha_{1jt}b_{it} + \alpha_{2jt}ni_{it}^{+} + \alpha_{3jt}(I(<0)ni^{+})_{it} + \varepsilon_i \quad (2.3)$$

$$m_{it} = \alpha_{0jt} + \alpha_{1jt}b_{it} + \alpha_{2jt}ni_{it}^{+} + \alpha_{3jt}(I(<0)ni^{+})_{it} + \alpha_{4jt}Lev_{it} + \varepsilon_i \quad (2.4)$$

Where ni_{it}^{+} stands for the absolute value of the natural logarithm of Net Income and $I(<0)ni^{+}$ is an indicator function for Net Income with negative values (i.e. losses), according to the Rhodes-Kropf et al. (2005) methodology. Short and long run fundamental values are calculated as follows. First, the full (non-issuer and issuer) population of UK companies is classified according to the Fama and French industry classification that employs 12 sector and uses their SIC[14] codes. Then, yearly OLS regressions are run for the population[15] to estimate the relevant coefficients across time and sectors ($\hat{\alpha}_{0jt}$ and $\hat{\alpha}_{1jt}$) which are used to obtain $v(\theta_{it};\alpha_{jt})$. By averaging the coefficients over the full sample, one gets $\bar{\alpha_j} = 1/T\sum\hat{\alpha}_{jt}$ which is used for calculating $v(\theta_{it}; \alpha_j)$. Lastly, the coefficients from the second step are matched with the relevant book values of the firms conducting SEOs and their fundamental values estimated.

Although the RKRV (2005) methodology provides the advantage of decomposing M/B ratios into two mispricing and one growth components, there is an

13 The I(<0) is a indicator variable that takes the value of 1 when the net income (ni) is negative and 0 otherwise.
14 SIC stands for Standard Industrial Classification codes.
15 The set of coefficients can be found in Table 2B.1 at Appendix 2B.

inconsistency in their approach.[16] The calculations of the long run fundamental value require data for the full sample span and so are subject to look-ahead bias in the absence of perfect foresight. Instead, we assume that managers and investors have available current and past year information only.[17] Thus the long-run multiple $\bar{\alpha}_j$ is calculated using a trailing 5-year moving average calculation from k=0 to k=4: $\bar{\alpha}_j = \sum \alpha_{jt-k}$. In dealing with the RKRV look-ahead bias, this modified RKRV approach yields different long run fundamental value and, by implication, long run value to growth estimates.[18]

2.3.2 Discounting

The discount with which the company issues their shares is the difference between the offer price (or placement price in the case of Private Placements) and the price of the share on the day after the SEO. Different definitions for the discount have been employed in prior literature. In this study we follow Hertzel and Smith (1993) approach, where discounting is defined as:

$$\frac{Price_{t+10} - Placement\ price}{Price_{t+10}} \qquad (2.5)$$

This requires the share price of the issuing company 10 days after the placement and the Placement price or Offer price, available through Thomson One. While most

16 See Coakley et al. (2010).

17 We think it is plausible to assume that managers will know the current year data for their own firms.

18 Note that Hertzel and Li (2010) also modify the RKRV approach albeit in a different manner to deal with look-ahead bias.

definitions in the literature focus on the first day return, using the price ten days after the placement gives a better reflection of the "true" price, after the initial fluctuations that may happen after the SEO.

2.3.3 Use of proceeds: Kim and Weisbach (2008) approach

In their study Kim and Weisbach (2008) investigate the effect of new equity issued by companies on subsequent increases in assets and expenditures by regressing seven key accounting variables on primary source of funds coming from the IPO or SEO, other sources of funds, internally generated funds, and total assets in the year prior to the transaction, controlling for time and country fixed effects. The seven accounting variables used to capture changes in assets and expenditures are Total Assets, Inventory, Cash, Capital Expenditures (CAPEX), Research & Development (R&D), Long-term debt reduction and Acquisition. Hertzel and Li (2010) extend the regressions run by Kim and Weisbach (2008) by adding the misvaluation components calculated using the methodology of Rdodes-Kropf et al. (2005) as independent variables. Their aim is to assess whether FSE and LRVTB components can help to explain changes in assets and expenditures in each of the three post-SEO years. Their results support the view that SEO uses of proceeds are mainly driven by long term growth prospects and not by misvaluation.

We follow an approach similar to that of Kim and Weisbach (2008) and Hertzel and Li (2010) in our sample of UK equity issues focusing on private placements. We also provide results for the combined subgroup of Right Issues (RIs) and Open Offers (OOs) for completeness and comparison purposes. Given the importance of discounting, especially in the case of PPs, we extent the Hertzel and Li (2010)

approach by adding discounting in the uses of proceeds regressions. In order to implement their methodology for the use of proceeds, we need 3 years post-issue data for the companies of our sample. This explains why our sample consists of the UK equity issues taking place in 1994-2014, giving three post-SEO years to investigate the use of proceeds for the companies in our sample. We employ the following regression equation in which the changes in seven scaled accounting use of funds variables (Y)[19] are regressed on the misvaluation and growth components of M/B, discounting and control variables. The latter include primary capital raised, other capital raised (internal funds), firm size and industry and year fixed effects. To avoid the impact of extreme observations, we use the natural logarithm of the scaled accounting variables.[20]

$$Y = \beta_1 FSE + \beta_2 TSSE + \beta_3 LRVTB + \beta_4 Discounting + \beta_5 ln[(\frac{Primary_{CAP}}{Total\ Assets_{(t-1)}})+1] + \beta_6 ln[(\frac{Other_{CAPt}}{Total\ Assets_{(t-1)}})+1] + \beta_7 ln(Total\ Assets_{(t-1)}) + \sum_{i=1994}^{2014} \theta i Year_{DUMMY} + \sum_{j=1}^{11} \lambda j\ Industry_{DUMMY} \quad (2.6)$$

As mentioned earlier, FSE, TSSE and LRVTB stand for the firm-specific error, time-series-specific error and the long-term value-to-book. These are the three RKRV parts in which the M/B ratios are decomposed. Discounting is defined as the difference between the price of the share ten days after the placement and the price the placement took place over the price ten days after the placement. Total Assets$_{(t-1)}$

[19] As mentioned before the seven accounting variables used are: Total Assets, Inventory, Cash, CAPEX, R&D, Long-term debt reduction and Acquisition.

[20] For the same reason, we also winsorise our data at 1% in each tail. We run our analysis with non-winsorised and winsorised data.

is the amount of total assets the year before the equity issue. In the same line with Kim and Weisbach (2008) and Hertzel and Li (2010), $Primary_{CAP}$ is equal to the natural logarithm of primary capital normalised by $Total\ Assets_{(t-1)}$.[21]

$Other_{CAPt}$ captures funds coming from other than primary capital and is equal to:

$$Other_{CAPt} = ln[(\sum_{i=1}^{t} \frac{Total\ Sources\ of\ Funds_t - Primary_{CAP}}{TOTAL\ ASSETS_{(t-1)}}) + 1]. \quad (2.7)$$

The regression above (2.6) includes year and industry fixed effects, while standard errors are adjusted for year and firm-level clustering.

2.3.4 Data and sample summary statistics

Data on all follow-on equity deals by UK issuers on London's Main market and AIM over the period 1994-2014 are collected from Thomson ONE while distinguishing between Private Placements, Rights Issues and Open Offers. Only deals occurring in the UK public domain are studied. Unit and registration cases as well as sales of secondary shares are excluded. In cases where a firm issues equity using different types of issuance options (for example a Placement and an Open Offer) on the same date, both deals are included in our sample. After applying these criteria, the deal firms are matched with available Datastream data[22] which yields a sample of 3,631 deals. Since RKRV components as well as discounting are the main variables in this

[21] More specifically, $Primary_{CAP}$ = ln [(primary capital / $TOTAL\ ASSETS_{(t-1)}$) +1], where primary capital is the primary shares offered in the equity issue multiplied by the issue price.

[22] SEDOL (Stock Exchange Daily Official List) numbers as well as manual matching, where needed, are used.

chapter, the deals for which firm- and sector-specific errors, growth prospects and discounting are unavailable are excluded. This leads us to our final sample of 2,860 deals, of which the vast majority (2,376 or 83%) is Private Placements (PPs). The sample terminates in 2014 to allow for three years of available data for the use of proceeds and long-run performance analysis of our chapter. More details about the sample distribution across different offering techniques can be found in Tables 2A.1 and 2A.2 in Appendix 2A.

Table 2.1 shows the distribution across PPs, rights issues and open offers during 1994-2014.

Table 2.1 – Annual distribution of sample (1994-2014)

(1)	(2)	(3)	(4)	(5)
Year	Total	Private Placements	Rights Issues	Open Offers
1994	66	59	7	0
1995	60	55	5	0
1996	97	43	54	0
1997	47	26	21	0
1998	33	16	15	2
1999	33	13	16	4
2000	122	100	15	7
2001	243	171	23	49
2002	105	50	16	39
2003	108	56	10	42
2004	98	49	14	35
2005	65	32	28	5
2006	79	66	10	3
2007	188	181	1	6
2008	201	196	2	3
2009	244	237	1	6
2010	187	181	0	6
2011	219	211	1	7
2012	181	174	0	7
2013	259	245	0	14
2014	225	215	0	10
Total	2,860	2,376	239	245

Table 2.1 shows how our sample of deals (1994-2014) is distributed across the years examined in our study for the deals having all three RKRV components and discounting data available. Column (2) shows the yearly distribution of deals for the whole sample, while Columns (3), (4) and (5) for the subsamples of Private Placements (PPs), Rights Issues (RIs) and Open Offers (OOs) respectively. Data on the UK equity issues are from Thomson ONE.

PPs have been the main means for raising follow-on[23] equity financing across all sample years and they are especially predominant from 2007 until 2014, with a peak in 2009 (237 deals). Rights Issues (RIs) and Open Offers (OOs) were prominent in the early sample years. RIs peak in 1996 (54 deals) while OOs peak in 2001 (49 deals). From 2007, however, when PPs rose sharply in popularity, the numbers for both RIs and OOs have declined dramatically. This sample composition explains the chapter's focus on PPs.

The distribution of deals across the 12 Fama & French industry sectors is depicted in Figure 2A.1, Appendix 2A. The 12 industry sectors according to Fama & French classification are: (1) Consumer non-durables (Food, Tobacco, Textiles, Apparel, Leather, Toys), (2) Consumer durables (Cars, TV's, Furniture, Household Appliances), (3) Manufacturing (Machinery, Trucks, Planes, Office Furniture, Paper, Com Printing), (4) Energy (Oil, Gas, and Coal Extraction and Products), (5) Chemicals and Allied Products, (6) Business Equipment (Computers, Software, and Electronic Equipment), (7) Telephone and Television Transmission, (8) Utilities, (9) Wholesale, Retail, and Some Services (Laundries, Repair Shops), (10) Healthcare, Medical Equipment, and Drugs, (11) Finance and (12) Other (Mines, Construction, Transport, Hotels, Bus Services, Entertainment. For the purposes of industry classification SIC codes for the firms of our sample are used.

[23] Meaning, financing after the initial public offering (IPO) of the firm. Companies after their IPO may return again and seek for further financing through SEOs.

The vast majority of PPs and Other deals are in group (12). However, we have a quite large number of deals conducted by firms in the financial (11), business equipment (6), energy (4) and healthcare (10) sectors.

Table 2.2[24] provides summary statistics for our sample of PPs versus RIs and OOs. Since both OOs RIs are public issues, they are grouped together and compared with PPs. We include variables which capture size, leverage, profitability, liquidity and turnover of our sample firms. We also include the discounting associated with PPs, RIs and OOs. In Panel A of Table 2.2 minimum, maximum, mean and median values of the variables are included, as well as a test for differences in mean values (column 11) and a non-parametric test for differences in median values (column 12).

Additional information about the standard deviation and the values of the variables at the 5% and 95% percentiles are in Panel B of Table 2.2, to provide more information about the distribution of the variables. Size is the logarithm of total assets and is used to capture the size of the company. Leverage (book leverage) is the ratio of total debt over total assets. Tangibility is the ratio of property, plant and equipment of the firm over total assets. Three profitability ratios are reported in Table 2.2: profitability, ROA and ROE. Profitability is defined as the ratio of earnings before interest and taxes (EBIT) over total assets. ROA is the ratio of EBITt over ((Total $Assets_{(t)}$ + Total $Assets_{(t-1)}$)/2), while ROE is the ratio of net income over equity. All the profitability ratios reported in Table 2.2 are not in percentage terms. Current ratio and Quick ratio are both liquidity ratios and are defined as the ratios of current assets over current liabilities and (current assets – inventory) over current liabilities respectively. Total assets (TA) turnover is the ratio of sales over total

[24] In Table 2.2 winsorised data at 1% in each tail is used. However, even when using non-winsorised data the results remain on average qualitatively the same.

Table 2.2 – Sample summary statistics

PANEL A

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
		Private Placements (PPs)				Rights Issues(RIs) Open Offers (OOs)					(4) vs.(9)	(5) vs.(10)
	N	Min	Max	Mean	Median	N	Min	Max	Mean	Median	t-diff in means	χ-diff in medians
Size	1,866	-0.470	3.408	1.178	1.144	353	-0.208	3.408	1.811	1.752	14.315	0.000
Leverage	1,857	0.000	0.848	0.138	0.058	352	0.000	0.848	0.217	0.196	7.296	0.000
Tangibility	1,790	0.000	0.929	0.183	0.061	353	0.000	0.929	0.307	0.193	7.155	0.000
Profitability	1,866	-4.432	0.334	-0.292	-0.078	353	-4.136	0.334	-0.119	0.024	5.946	0.000
ROA	1,818	-1.993	0.417	-0.222	-0.098	351	-1.993	0.417	-0.089	0.030	6.799	0.000
ROE	1,867	-9.302	9.224	-0.331	-0.010	353	-9.302	9.224	-0.057	0.030	2.864	0.000
Current ratio	1,706	0.085	35.364	3.879	1.513	316	0.085	35.364	2.604	1.298	-4.139	0.000
Quick ratio	1,706	0.056	35.364	3.662	1.216	316	0.056	35.364	2.316	0.949	-4.332	0.000
TA turnover	1,866	0.000	3.472	0.560	0.274	353	0.000	3.472	0.781	0.551	5.144	0.000

Table 2.2 reports summary statistics for Private Placements (PPs) versus Rights Issues (RIs) and Open Offers (OOs). Results are based on winsorised data. Data is winsorised at 1% in both tails of the distribution. Size is the logarithm of Total Assets. Leverage (book leverage) is the ratio of total debt over total assets. Tangibility is the ratio of Property, Plant and Equipment (PPE) over Total Assets. Profitability is the ratio of Earnings Before Interest and Taxes (EBIT) over Total Assets. ROA is the ratio of $EBIT_t$ over ((Total $Assets_t$ + Total $Assets_{t-1}$)/2). ROE is the ratio of Net Income over Equity. The liquidity ratios reported here, current ratio and quick ratio are the ratios of Current Assets over Current Liabilities and (Current Assets – Inventory) over Current Liabilities respectively. TA turnover is the ratio of sales over Total Assets. The last two columns of Panel A provide tests for equality of means (Column 11) and medians (Column 12). Column 11 has the result of t-statistic for differences in means. Column 12 has the p-values of a non-parametric equality of medians test.

Table 2.2 – Sample summary statistics (cont.)

PANEL B						
	(1)	(2)	(3)	(4)	(5)	(6)
		Private Placements (PPs)			Rights Issues(RIs) Open Offers (OOs)	
	Standard Deviation	5% percentile	95% percentile	Standard Deviation	5% percentile	95% percentile
Log(TA)	0.686	0.087	2.279	0.776	0.581	3.226
Leverage	0.183	0.000	0.515	0.188	0.000	0.541
Tangibility	0.248	0.000	0.805	0.305	0.002	0.903
Profitability	0.711	-1.454	0.173	0.451	-0.681	0.128
ROA	0.428	-1.063	0.206	0.314	-0.719	0.156
ROE	1.875	-2.874	0.712	1.602	-1.821	0.524
Current ratio	6.203	0.262	17.355	4.783	0.350	9.211
Quick ratio	6.219	0.203	17.303	4.831	0.278	9.198
TA turnover	0.725	0.000	1.929	0.741	0.009	2.297

assets.

Based on our findings in Table 2.2, PP firms are significantly smaller than firms choosing RIs and OOs (1.178 versus 1.811 respectively) and have significantly lower tangible assets (0.183 versus 0.307). Interestingly, in terms of leverage PP firms have lower leverage on average compared to firms issuing equity using RIs and/or OOs and this difference is statistically significant. In terms of median leverage values, companies placing their equity privately have lower median leverage values than RIs and OOs, with the median test rejecting the null hypothesis of equality of medians. PP issuers are significantly less profitable than public issuers in terms of mean and median Profitability, ROA and ROE. In addition, liquidity ratios are higher for the PPs subsample compared to the RIs and OOs one, with current and quick ratios of 3.879 and 3.662 versus 2.604 and 2.316 respectively. The same pattern is also observed for median values of the liquidity ratios. Also, Total Asset Turnover for PPs is lower compared to the case of RIs and OOs and the difference in means is statistically significant. When testing the differences in medians of the aforementioned statistics in Table 2.2 using a non-parametric equality in medians test, we see that in all cases we can reject the null hypothesis of equality of medians. In Table 2A.3 of Appendix 2A summary statistics for the periods before and after the recent financial crisis are reported.

2.4 Empirical results

2.4.1 Decomposition of Market-to-Book ratio (M/B)

The market-to-book (M/B) ratios and their components of the Rhodes-Kropf et al. (RKRV) (2005) study are reported in Panel A of Table 2.3 for different categories of SEO (i.e. Private Placements (PPs), Rights Issues (RIs) and Open Offers (OOs)).

Table 2.3– Decomposition of Market-to-Book ratio (1994-2014)

PANEL A								
	PPs			RIs+OOs				
	N	Mean	Median	N	Mean	Median	t-diff in means	χ-diff in medians
M/B	2,376	0.834 (31.97)	0.723	484	0.896 (17.07)	0.778	1.048	0.295
FSE	2,376	-0.035 (-1.78)	-0.049	484	0.255 (6.64)	0.231	6.723	0.000
TSSE	2,376	-0.047 (-7.67)	-0.008	484	-0.033 (-2.25)	-0.011	0.883	0.803
LRVTB	2,376	0.915 (54.60)	0.929	484	0.666 (18.47)	0.645	-6.268	0.000
PANEL B								
Discounting (*)	2,376	0.210 (12.98)	0.117	484	0.061 (1.73)	0.096	-3.812	0.103

Panel A of Table 2.3 shows the decomposition of M/B ratios into FSE, TSSE and LRVTB components using the Rhodes-Kropf et al., 2005(RKRV) approach (Model 3), modified as in Coakley et al. (2010). Panel B of Table 2.3 shows results for discounting calculated following the Hertzel and Smith (1993) approach. Results are based on winsorised data (1% at both tails of the distribution). FSE, TSSE and LRVTB stand for the firm-specific error, time-series sector error and long-run value-to-book. According to the RKRV (2005) methodology, the first two components (FSE and TSSE) capture misvaluation and the last one (LRVTB) growth prospects of the firm. Discounting is defined here as the ratio of the difference between the price of the share of a firm ten days after the equity issue and the offer price over the price of the share ten days after the equity issue (Hertzel and Smith, 1993). Information about the split between Rights Issues (RIs), Open Offers (OOs) and Private Placements (PPs) is from Thomson One. The period examined in this study is 1994-2014 and the sample consists of 2,860 deals. The last two columns of the table provide tests for equality of means and medians. In brackets, the t-statistics for the null that the mean is equal to zero.

Panel A of Table 2.3[25] presents the three separate components of the M/B ratio using modified RKRV Model 3:[26] short run and long run misvaluation (FSE and TSSE) and long run growth (LRVTB). Both mean and median results are reported for all three components and the overall M/B ratio. In parentheses, we report the t-statistics of a univariate test with null hypothesis that the mean values are equal to zero.

Long run growth prospects (LRVTB) are large and significantly positive for PPs as

[25] In Table 2.3 we use winsorised data at 1% in each tail of the distribution. Results using non-winsorised data are qualitatively the same.

[26] RKRV (2005) Model 3 takes into consideration book-value, net income and leverage and appears to have the highest explanatory power from all three models examined in the RKRV study. For more details on that see Rhodes-Kropf et al. (2005).

well as RIs and OOs. However, PP firms have considerably higher growth prospects than those of RIs and OOs (0.915 versus 0.666) despite the former having lower MTB ratios (0.834 versus 0.896). The difference in growth prospects component of the M/B ratio (LRVTB) between firms issuing equity using PPs and RIs, OOs is statistically significant at the 1% significance level. The sheer magnitude of the PP long run growth prospects raises the possibility that these stocks exhibit prospect theory, lottery-like features. There is a small probability that some such stocks may become the next Amazon or Snap Chat.

Turning to misvaluation components of M/B ratio, most results are in line with the literature, but others are unexpected. The FSE for other SEOs (RIs and OOs) are positive (both in mean and median values of FSE). These results are in line with the prior literature documenting that firms usually choose to issue equity to the public when they are overvalued, taking advantage of this window of opportunity and thereby raising equity funds cheaply. This supports our Hypothesis H1 that SEOs firms are misvalued. Also, this result is in line with the Hertzel and Li (2010) finding on FSE for their sample of 4,325 US SEOs over the earlier 1970-2004 sample period.

In contrast, PPs are undervalued in terms of firm specific error (FSE). The short-run misvaluation component for PPs (-0.035) is significantly negative, implying that undervaluation matters. This undervaluation result for PPs appears counterintuitive at first glance. However, there is the possibility that it could serve as a motivation for institutional investors to engage in such deals. From this perspective, our PP result for FSE is novel and it supports or Hypothesis H3. It is also important to mention here that the difference in FSE component between PPs and RIs/OOs is statistically significant both in mean and median values.

The results for long run sectoral misvaluation (TSSE) are equally interesting as PPs are

significantly undervalued with a TSSE of -0.047. Long run misvaluation (TSSE) is small and significantly negative for the RIs/OOs subsample (-0.033). So the long run misvaluation results imply that virtually all SEOs occur when their industry is relatively undervalued. The difference, however, between TSSE in the case of PPs versus RIs/OOs is not found to be statistically significant both in terms on means as well as medians.

Overall, PPs stand out as they are undervalued both in the short and long run so that undervaluation at both the firm and sector specific levels is self-reinforcing. This supports our undervaluation hypothesis for PPs. By contrast, other SEOs are overvalued at the firm-specific level but undervalued at the sector level and the two misvaluation components offset each other. Thus, we find support for the short but not for the long run overvaluation hypothesis for public SEOs. Both of these results are novel and indicate PPs are very different from public SEOs in terms of net misvaluation. While the former are undervalued by -0.082 on aggregate, the net overvaluation is 0.222 for the latter.

When we look at the M/B ratios for PPs and RIs/OOs we see that the latter subgroup has a higher M/B ratio compared to the former. The difference between these two values is not significant, though, in either means or medians. This finding, combined with the results discussed above about growth prospects and misvaluation components, shows that if M/B ratio is used as a proxy for capturing the growth prospects of firms, the results can be misleading especially if there are private placements of equity involved.

Panel B of Table 2.3 reports the winsorised (at 1% in both tails of the distribution) value for discounting. Based on non-winsorised data the mean value for PPs discounting is less (0.008) than the mean discounting figure for RIs and OOs (0.016), though the difference is not statistically significant.[27] By individually looking at the extreme discounting values in

[27] Non-winsorised results not reported here.

the non-winsorised data we found that these are coming in most cases by mistakes and/or omissions in the input information in the database the data is coming from. Thus, in this particular case the winsorised figures reveal the true picture for discounting of PPs and RIs, OOs. The difference between the mean (winsorised) PPs discount (0.210) and that of for RIs and OOs (0.061) is statistically significant. Similar pattern is observed in the median values of discounting. Given these results we can conclude that discounting in the case of PPs is higher than that in the case of pubic equity issues. These results provide support for H6.

Summing up, while our results support the misvaluation hypothesis for all issuers, undervaluation is found to be both a more important and widespread feature of SEOs than hitherto revealed in the literature. Combining these findings with the results about discounting (Panel B of Table 2.2), especially for PPs, we see that the counterparty in the PP deals received on average a "double" incentive to buy the shares placed privately by equity issuers. This "double" incentive composed of the discounting and the undervaluation, could act as a compensation for the risk taken by investing in small firms with on average low profitability.

2.4.2 Use of proceeds

2.4.2.1 Private Placements results

This section analyses and discusses the separate impact of pre-issue M/B components and discounting on the post-issue investment decisions (use of proceeds) in our sample of PP firms. Table 2.4 presents the regression results for seven accounting variables for the firms conducting private placements during our sample period.

Our PP results in Table 2.4[28] convey a different general impression than do those in the corresponding Table 5 in Hertzel and Li (2010) for US SEOs over the 1970-2004 period. We conjecture that the differences may stem from the different sample periods employed and also by the fact that they examine SEOs as a whole, while we focus on PPs.

Our findings indicate that post-issue changes in inventory, total assets and CAPEX are positively and significantly related to FSE. Interestingly, the FSE coefficients on the three investment components (R&D, CAPEX, Total assets) reported in Hertzel and Li (2010) are mostly insignificant. Our mispricing findings on CAPEX are in line with those found in the Alzahrani and Rao (2014)[29] US study. Our findings support their view that misvaluation enables SEO firms to raise equity capital cheaply and the resultant low cost of capital encourages investment. Results for Cash are positive for FSE and significant for the year of the equity issue and one year after the issue. Our positive coefficients for Cash are in line with Hertzel and Li (2010). Regarding the reduction in long-term debt, coefficients are found negative and significant. For Acquisition, we find a negative relationship between FSE and the changes in acquisitions, and the results are significant for the first, second and third year after the equity is issued. Finally, the coefficients on the Primary Cap variable appear positive and significant for almost all variables, while for internal finds (other capital) the coefficients are insignificant for the case of inventory and R&D.

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[28] Table 2.4 reports results based on non-winsorised data. Results based on winsorised data are qualitatively (and some cases quantitatively) the same and are reported in Table 2D (2.4), at Appendix 2D.

[29] Our study differs in three respects from that of Alzahrani and Rao (2014). First, we focus on investment and related decisions by the sub-sample of firms involved in secondary equity issues and not all firms. Second, our regressions have a log-log functional form whilst theirs are in levels. Finally, they examined the contemporaneous relationship only and not in three subsequent years.

Table 2.4 – M/B & uses of proceeds: PPs

		FSE	TSSE	LRVTB	DISC.	PRIMARY CAP	OTHER CAP	TOTAL ASSETS	N	Adj. R^2
Y	t	β 1	β 2	β 3		β 4	β 5	β 6		
Δ Cash	1	0.06***	0.05**	-0.01	0.01	0.28***	0.02*	-0.00	1,978	0.13
	2	0.03**	-0.01	-0.03	0.03*	0.57***	0.10***	0.01	1,732	0.26
	3	0.02	-0.08	-0.01	0.01	0.57***	0.12***	-0.00	1,495	0.28
	4	0.01	-0.12**	-0.02	-0.01	0.47***	0.22***	-0.01	1,171	0.30
Δ Inventory	1	0.01**	0.01	-0.01	0.00	0.01	0.00	-0.01	2,028	0.08
	2	0.02**	0.03**	-0.01*	0.01	0.04*	0.01	-0.01**	1,760	0.14
	3	0.02	0.03**	-0.02	0.00	0.08*	0.01	-0.01	1,517	0.10
	4	0.03*	0.03	-0.02	0.00	0.07	0.02	-0.01	1,183	0.11
Δ Total Assets	1	0.13***	0.08	-0.00	-0.03	0.55***	0.17***	-0.01	2,060	0.26
	2	0.13***	0.10	0.06	-0.03	1.17***	0.34***	-0.00	1,790	0.47
	3	0.13***	0.10	0.09	-0.07*	1.13***	0.41***	-0.02	1,545	0.48
	4	0.11**	0.02	0.07	-0.07**	1.14***	0.56***	-0.03	1,201	0.55
Σ CAPEX	1	0.01**	-0.01	-0.01	-0.00	0.11***	0.04***	-0.00	2,008	0.19
	2	0.03***	-0.01	-0.01	-0.00	0.23***	0.07***	0.00	1,712	0.28
	3	0.04***	0.01	-0.02	0.00	0.38***	0.08***	0.00	1,453	0.35
	4	0.03*	0.05	-0.03	0.02	0.55***	0.13***	0.01	1,126	0.40
Σ R&D	1	0.01	-0.02	0.05***	-0.01	0.03	-0.02*	-0.01	528	0.31
	2	0.01	-0.05	0.07***	0.01	0.19**	-0.02	-0.01	408	0.32
	3	0.02	-0.12**	0.12***	0.04	0.24	0.02	-0.00	320	0.37
	4	0.00	-0.14**	0.15***	0.03	0.37*	0.05	-0.02	249	0.34
Σ Acquisition	1	-0.02	-0.02	-0.01	-0.02	0.18**	0.03	-0.01*	1,674	0.11
	2	-0.03*	-0.04	-0.01	-0.01	0.44***	0.07***	-0.01	1,423	0.19
	3	-0.05**	-0.01	-0.07**	-0.03	0.57***	0.10***	-0.02**	1,194	0.22
	4	-0.07**	-0.08	-0.11***	-0.06	0.84***	0.13***	-0.04***	892	0.25
Σ LTRD	1	-0.03**	-0.07**	-0.03	-0.05*	0.14*	0.01	-0.04***	1,674	0.04
	2	-0.07***	-0.14***	-0.04	-0.08*	0.36**	0.01	-0.03**	1,384	0.05
	3	-0.06**	-0.12**	-0.07	-0.12*	0.47**	0.05**	-0.04**	1,159	0.09
	4	-0.07*	-0.11	-0.11*	-0.11**	0.62*	0.09***	-0.05**	884	0.10

Datastream definitions of variables used: Cash represents money available for use in the normal operations of the company. It is the most liquid of all of the company's assets. Inventory represent tangible items or merchandise net of advances and obsolescence acquired for either (1) resale directly or (2) included in the production of finished goods manufactured for sale in the normal course of operation. Total Assets represent the sum of total current assets, long term receivables, investment in unconsolidated subsidiaries, other investments, net property plant and equipment and other assets. Capital expenditures (CAPEX) represent the funds used to acquire fixed assets other than those associated with acquisitions. R&D represents all direct and indirect costs related to the creation and development of new processes, techniques, applications and products with commercial possibilities. Acquisitions represent assets acquired through pooling of interests or mergers. It does not include capital expenditures of acquired companies. Reduction in long term debt (LTRD) represents funds used to reduce long term debt, capitalized lease obligations and includes decrease in debt from the conversion of debentures into common stock. ***, ** and * are significance levels of 1%, 5% and 10% respectively. t represents different points in time: t=1 is the year of the equity issue, t=2 is the year after the issue and t=3, t=4 are the second and third years after the equity issue. FSE, TSSE, LRVTB are the three parts of the RKRV (2005) M/B ratio decompositions and DISC. is the discounting relating to the particular deal, defined according to Hertzel and Smith (1993). Standard errors are adjusted for year and firm-level clustering.

Turning to the growth prospects of the issuing firms, the LRVTB coefficients are virtually all insignificant for long term investment, with the exception of R&D coefficients, which are positive and statistically significant during the 3-year period examined. It is interesting to note that the R&D coefficient for growth prospects increases in the years following the private placement. This finding is in line with Hertzel and Li (2010) and shows that as the growth prospects of our issuers increase, the more they invest in R&D. Thus Hypothesis H7 is supported for R&D. Furthermore, we find that to some extent LRVTB coefficients are negative and significant for Acquisition. More specifically, we find a statistically significant negative relationship between growth prospects and changes in Acquisitions for the second and third year after the equity was issued. [30]

Regarding the relationship of discounting and the different uses of proceeds, there is a negative and significant at least at 10% level relationship between discounting and reduction in long-term debt. Based on this result, the higher the discount with which a firm is placing its equity with an institutional investor the lower the reduction in its long-term debt it is. Also, we see a negative and significant relationship between discounting and changes in total assets for the second and third years after the private placement. This finding implies that the higher the discount the less the investment in total assets in the years subsequent to the equity issue.

2.4.2.2 Rights Issues and Open Offers

Although our sample of Rights Issues (RIs) and Open Offers (OOs) is smaller than the one of Private Placements, we run also the same regressions for the sub-sample of public equity issues in order to be able to compare private versus public issuers' use of proceeds.

[30] All the conclusions made above are based on non-winsorised data. However, the results remain qualitatively the same when we use winsorised at 1% on each tail of the distribution results.

Our results can be found in Table 2.5[31].

In the previous section we saw that the FSE coefficients for Total Assets, CAPEX and Inventory are positive and statistically significant for PPs. LRVTB coefficients are significantly positive for R&D in the year of the placement as well as in the three subsequent years. Negative and significant LRVTB coefficients are also found for Acquisition and long-term debt reduction.

Regression results for RIs and OOs differ slightly from the PP ones. LRVTB coefficients for Total Assets are positive and significant at least at 5% significance level. Contrary to PP results, FSE coefficients for CAPEX are insignificant for RIs and OOs, while LRVTB coefficients remain insignificant as in the PPs case. For R&D, LRVTB coefficients are positive but significant only in the year the equity is issued (coefficient significant at 5%) and the year after the issue (coefficient significant at 10%) for RIs and OOs. FSE coefficients follow a similar pattern with the ones of PPs; they are positive but insignificant. Regarding discounting, the coefficients are found negative and significant for R&D for the first, second and third year after the equity has been issues. This means that the more the discount with which the equity is offered, the less the investment in R&D for the case of Rights Issues and Open Offers. Furthermore, similarly to the PPs findings, discounting coefficients are negative and significant at least at 10% level in the case of total assets, meaning that discount has a negative impact on the investment made in total assets of the equity issuing firms.

[31] Table 2.5 reports results based on non-winsorised data. Results based on winsorised data are qualitatively (and some cases quantitatively) the same and are reported in Table 2D (2.5), at Appendix 2D.

Table 2.5 – M/B and uses of proceeds: RIs & OOs

		FSE	TSSE	LRVTB	DISC.	PRIMARY CAP	OTHER CAP	TOTAL ASSETS	N	Adj. R^2
Y	t	β 1	β 2	β 3		β 4	β 5	β 6		
Δ Cash	1	0.04	0.05	0.05*	-0.01	-0.04	0.03	-0.01	417	0.00
	2	0.01	0.09*	0.08**	0.03	0.19	0.09***	-0.02	351	0.18
	3	-0.00	-0.00	0.07**	0.00	0.26	0.15***	-0.03*	298	0.25
	4	-0.02	-0.01	0.07**	0.01	0.41	0.17***	-0.03	246	0.28
Δ Inventory	1	0.01*	0.02	0.01	-0.00	0.00	-0.01	0.00	418	0.12
	2	0.02*	0.02	0.01	-0.00	-0.02	0.03***	-0.00	349	0.13
	3	0.02	-0.00	0.00	-0.02	0.01	0.02	-0.01	295	0.14
	4	0.03	0.01	0.01	-0.01	-0.10	0.04*	-0.01	243	0.19
Δ Total Assets	1	0.11**	-0.00	0.08*	-0.08***	0.79***	0.00	0.01	442	0.37
	2	0.08**	-0.01	0.12*	-0.09*	1.21***	0.35***	0.02	373	0.45
	3	0.17***	-0.01	0.09	-0.09*	1.34***	0.40***	0.04	318	0.45
	4	0.13***	-0.15	0.11*	-0.11*	1.19***	0.51***	0.03	263	0.56
Σ CAPEX	1	-0.01	0.01	-0.02	-0.01	0.44**	0.08***	0.00	441	0.46
	2	0.01	0.01	0.02	-0.02	0.18*	0.09***	0.01	372	0.29
	3	0.02	0.04	0.04	-0.02	0.27	0.13***	0.01	317	0.41
	4	-0.01	0.04	0.04	0.00	0.45	0.20***	-0.00	262	0.43
Σ R&D	1	0.00	-0.04***	0.05**	-0.01	0.03	-0.02	-0.01	136	0.48
	2	0.01	-0.09*	0.12*	-0.07***	0.12	0.04	-0.01	103	0.43
	3	0.03	-0.04	0.12	-0.11***	0.16	0.07	0.00	84	0.42
	4	0.08	-0.16*	0.07	-0.17***	-0.05	0.06	0.00	70	0.29
Σ Acquisition	1	-0.03	-0.03	-0.01	0.00	0.50*	0.01	0.00	354	0.14
	2	0.00	0.01	-0.01	0.03	0.85***	0.11**	-0.02	290	0.27
	3	0.03	0.02	0.01	0.00	0.97***	0.13**	-0.02	241	0.32
	4	-0.02	-0.01	-0.01	0.01	0.99***	0.20***	0.00	188	0.42
Σ LTRD	1	-0.04	-0.11	0.01	-0.01	-0.00	0.02	-0.01	365	0.03
	2	0.02	0.05	0.08	0.02	0.02	0.06	-0.03	303	0.09
	3	0.05	0.01	0.04	0.01	0.02	0.10*	-0.02	257	0.08
	4	0.03	0.06	-0.03	0.01	0.16	0.09	0.01	204	0.13

Datastream definitions of variables used: Cash represents money available for use in the normal operations of the company. It is the most liquid of all of the company's assets. Inventory represent tangible items or merchandise net of advances and obsolescence acquired for either (1) resale directly or (2) included in the production of finished goods manufactured for sale in the normal course of operation. Total Assets represent the sum of total current assets, long term receivables, investment in unconsolidated subsidiaries, other investments, net property plant and equipment and other assets. Capital expenditures (CAPEX) represent the funds used to acquire fixed assets other than those associated with acquisitions. R&D represents all direct and indirect costs related to the creation and development of new processes, techniques, applications and products with commercial possibilities. Acquisitions represent assets acquired through pooling of interests or mergers. It does not include capital expenditures of acquired companies. Reduction in long term debt (LTRD) represents funds used to reduce long term debt, capitalized lease obligations and includes decrease in debt from the conversion of debentures into common stock. ***, ** and * are significance levels of 1%, 5% and 10% respectively. t represents different points in time: t=1 is the year of the equity issue, t=2 is the year after the issue and t=3, t=4 are the second and third years after the equity issue. FSE, TSSE, LRVTB are the three parts of the RKRV (2005) M/B ratio decompositions and DISC. is the discounting relating to the particular deal, defined according to Hertzel and Smith (1993). Standard errors are adjusted for year and firm–level clustering.

2.4.3 Further discussion

2.4.3.1 Pre- and post-crisis differences in the use of proceeds

In this section we explore whether there are any differences in the way companies are using the proceeds from the equity issues pre- and post- the financial crisis. The global financial crisis affected companies worldwide in their profitability, financial and operating performance. Thus we would expect that financial crisis may have an impact on the way firms use the money they raise from equity markets.

In order to investigate this question, we run the same use of proceeds regressions taking into consideration pre- (1994-2007) and post-crisis (2008-2014) subsamples.[32] Columns (1) - (4) in Table 2.6[33] report the coefficients for the two misvaluation RKRV components (FSE and TSSE), growth prospects (LRVTB) and discounting (DISC.) during the pre-crisis period (1994-2007). Columns (5) – (8) provide the marginal change in coefficients for the same variables in the post-crisis period (2008-2014). Number of observations and adjusted R-squared are reported in Columns (9) and (10) of the table. The pre-crisis coefficients and post-crisis coefficients (not margins) can be found in Table 2C.1 in Appendix 2C.

[32] Splitting the sample into 1994-2007 (pre-crisis) and 2008-2014 (post-crisis) sub-samples, leaves 917 and 1,459 PPs in the pre- and post-crisis periods respectively.

[33] Table 2.6 reports results based on non-winsorised data. Results based on winsorised data are qualitatively (and some cases quantitatively) the same and are reported in Table 2D (2.6), at Appendix 2D.

Table 2.6 – Pre- and post-crisis use of proceeds for PPs

		PRE-CRISIS				POST-CRISIS (margin)					
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
		FSE	TSSE	LRVTB	DISC.	FSE	TSSE	LRVTB	DISC.	N	Adj. R^2
Y	t	β 1	β 2	β 3							
Δ Cash	1	0.07***	0.06**	-0.02	-0.00	-0.03	-0.01	-0.00	0.03	1,978	0.14
	2	0.06***	-0.00	-0.03	0.01	-0.04	-0.01	-0.00	0.03	1,732	0.27
	3	0.02	-0.08	-0.02	-0.01	-0.01	0.01	0.01	0.04	1,495	0.27
	4	0.00	-0.13	-0.07	-0.02	0.00	0.02	0.12*	0.02	1,171	0.30
Δ INV.	1	0.02**	0.02	-0.02	0.00	-0.02**	-0.01	0.02	-0.01	2,028	0.08
	2	0.05*	0.04	-0.02	0.01	-0.05*	-0.02	0.02	-0.01	1,760	0.15
	3	0.07*	0.05*	-0.03	0.01	-0.06*	-0.04	0.03	-0.01	1,517	0.12
	4	0.07**	0.05	-0.02	0.01	-0.07**	-0.05	0.02	-0.00	1,183	0.12
Δ TA	1	0.14***	0.03	-0.06	-0.02	-0.03	0.07	0.10	-0.03	2,060	0.26
	2	0.19***	0.05	-0.02	-0.02	-0.08	0.06	0.13*	-0.04	1,790	0.47
	3	0.22***	0.02	-0.00	-0.03	-0.12**	0.09	0.15*	-0.08	1,545	0.49
	4	0.21***	-0.06	-0.00	-0.05	-0.16**	0.10	0.16*	-0.06	1,201	0.56
Σ CAPEX	1	0.01	-0.01	-0.02	-0.00	0.01	-0.00	0.01	-0.01	2,008	0.19
	2	0.02	0.01	-0.01	0.00	0.01	-0.04	-0.00	-0.01	1,712	0.28
	3	0.02	0.04	-0.03	0.01	0.03	-0.06	0.02	-0.02	1,453	0.36
	4	0.02	0.11	-0.06	0.02	0.02	-0.11	0.05	-0.00	1,126	0.40
Σ R&D	1	-0.02***	-0.05***	0.04***	0.00	0.03***	0.07***	0.02	-0.02	528	0.32
	2	-0.02	-0.13***	0.07***	0.01	0.05	0.16***	-0.00	0.00	408	0.33
	3	-0.03	-0.16***	0.11*	0.02	0.06	0.13	0.00	0.07	320	0.40
	4	-0.03	-0.18***	0.09	-0.01	0.06	0.16	0.06	0.10*	249	0.38
Σ ACQ	1	-0.05**	-0.03	-0.00	-0.02	0.05**	0.01	0.00	-0.01	1,674	0.13
	2	-0.07*	0.00	-0.01	0.02	0.06	-0.06	0.00	-0.05	1,423	0.21
	3	-0.07*	0.03	-0.09	0.04	0.03	-0.05	0.05	-0.11	1,194	0.24
	4	-0.13***	0.01	-0.17*	-0.02	0.09	-0.13	0.13	-0.07	892	0.26
Σ LTRD	1	-0.05	-0.02	-0.08	-0.01	0.03	-0.08	0.09	-0.07	1,674	0.04
	2	-0.14**	-0.07	-0.09	-0.03	0.09	-0.12	0.08	-0.08	1,384	0.06
	3	-0.11*	-0.05	-0.16**	-0.05	0.05	-0.12	0.17*	-0.13	1,159	0.10
	4	-0.16*	-0.00	-0.23**	-0.09	0.12	-0.20	0.26**	-0.06	884	0.13

Datastream definitions of variables used: Cash represents money available for use in the normal operations of the company. It is the most liquid of all of the company's assets. Inventory represent tangible items or merchandise net of advances and obsolescence acquired for either (1) resale directly or (2) included in the production of finished goods manufactured for sale in the normal course of operation. Total Assets represent the sum of total current assets, long term receivables, investment in unconsolidated subsidiaries, other investments, net property plant and equipment and other assets. Capital expenditures (CAPEX) represent the funds used to acquire fixed assets other than those associated with acquisitions. R&D represents all direct and indirect costs related to the creation and development of new processes, techniques, applications and products with commercial possibilities. Acquisitions represent assets acquired through pooling of interests or mergers. It does not include capital expenditures of acquired companies. Reduction in long term debt (LTRD) represents funds used to reduce long term debt, capitalized lease obligations and includes decrease in debt from the conversion of debentures into common stock. For our analysis we consider 1994-2007 as pre-crisis and 2008-2014 as post-crisis periods. ***, ** and * are significance levels of 1%, 5% and 10% respectively. t represents different points in time: t=1 is the year of the equity issue, t=2 is the year after the issue and t=3, t=4 are the second and third years after the equity issue. FSE, TSSE, LRVTB are the three parts of the RKRV (2005) M/B ratio decompositions and DISC. is the discounting relating to the particular deal, defined according to Hertzel and Smith (1993). Standard errors are adjusted for year and firm-level clustering.

In terms of changes in Total Assets, the FSE coefficients are positive and significant in both pre- and post-crisis periods, indicating that misvalued firms issuing equity privately increase their total assets in the year of the issuance as well as in the 3 post-issue years. We notice, however, that the magnitude of the FSE coefficients for Total Assets is significantly reduced in the post-crisis period. For R&D variable there is a positive relationship between growth prospects and changes in the amount of money spent for research and development. Although the LRVTV coefficient is positive and significant both in the pre- and post-crisis periods, the difference in the effect of growth prospects in these two subsamples (1994-2007 and 2008-2014) is not significant. The results for R&D are quite intuitive here; when a firm has growth prospects and potentially positive NPV projects to invest in, it needs money in order to make efficient use of the projects in place and grow in the future. Having growth prospects and viable investment plans, a company can gain access to the financing needed by placing its equity privately to institutional investors.

Regarding changes in inventory, the FSE coefficient is positive and significant for the year of the private placement and all three subsequent years during the pre-crisis period we examine. This finding implies that the more misvalued a firm is the more they spend for inventory purposes. However, there is a significant negative marginal effect during the post-crisis period in the FSE coefficients for Inventory.[34] Furthermore, the FSE coefficients on Acquisitions (ACQ) and Long-term reduction in debt (LTRD) appear negative and mostly significant during the year of the equity placement and the three years after the deal. The marginal impact on the coefficients in the post-crisis period is not statistically significant in most cases. FSE coefficients on Acquisitions remain negative in

[34] The FSE coefficients become insignificant in the post-crisis period. Results for use of proceeds regression for pre- and post-crisis periods separately are in Appendix 2C.

the post-crisis period but they are statistically insignificant. For LTRD the results for firm-specific error (FSE) are negative and mostly significant during both the pre- and post-crisis periods, but they do not differ enough in magnitude and this explains why the marginal effect in not statistically significant in this case. This finding is interesting since it shows that when firms place their equity privately with institutional investors, in case their equity is overvalued, they do not take advantage of the overvaluation to reduce their debt as it would be the intuitive expectation.

2.4.3.2 Choice of equity issue mechanism and the use of proceeds

Based on the analysis being done so far, the decision to issue equity using private placements, rights issues or open offers seems exogenous. In this section we use a logistic model to explore factors affecting the choice of equity issue type and whether uses of proceeds can play a role in the choice of equity issuing mechanism. Attempts to model the choice between different equity issue types has been done in prior literature.[35] For example, Cronqvist and Nilsson (2005) using a nested logistic model explore potential factors affecting the choice between rights and private equity placements. In their analysis the first step of the nested logistic model is the choice between rights and private placements. For the second step, they distinguish uninsured from underwritten rights offerings and PPs to new as opposed to existing investors. They find that when information asymmetry is high, firms tend to choose private placements compared to issuing the equity to existing investors. Along similar lines, Chen et al. (2010) are examining factor affecting the choice of PIPEs versus SEOs and find that it is likely a firm to choose PIPEs when potential undervaluation is high. Also, they find that firms using PIPEs instead of SEOs have poor operating performance and high levels of information

[35] The equity issue choice mechanism is not the main focus of this study; it is done for completeness as additional analysis.

asymmetry.

In our analysis here we focus primarily on the role the intended uses of proceeds raised through either private or public equity issues may play in the decision of the equity issuing mechanism (i.e. Private Placements (PPs), Right Issues (RIs) or Open Offers (OOs)). We get information about the intended uses of proceeds from Thomson One.[36] We group the intended uses of proceeds into four subsamples: proceeds for General Corporate purposes, proceeds intended to be used for investment, proceeds targeted to reduce debt and cases where companies report multiple uses of proceeds. Under the category of Investment use of proceeds we have cases where companies report R&D, Capital Expenditures (CAPEX), Acquisitions and Inventory related investments. The implicit assumption we are making here is that firms are using the money raised in equity markets according to the intended uses of proceeds reported before the actual equity deal.

We use a logistic model to explore factors affecting choice between private placements of equity and other types, meaning rights and open offers taken together. The dummy variables for the intended uses of proceeds are included in the model. Additional explanatory variables used are the three RKRV components capturing firm- and sector-specific errors (FSE and TSSE) and growth prospects (LRVTB), discounting (DISC.), the natural logarithm of the book value of total assets of the issuing firms adjusted for inflation[37] (Size), the natural logarithm of the age of the firm at the time of the issue (Age), a market dummy variable which takes the value of 1 if the firm is listed on AIM and 0 if

[36] Information found in Thomson One about intended uses of proceeds is coming from documents the company submits regarding its plans about the use of money will be raised (prospectus etc).

[37] Total Assets are adjusted for inflation at 2004 levels.

listed on the main market (Market), and leverage of the equity issuer (Rel. Leverage).[38] Results are reported in Table 2.7.

Table 2.7 – Choice of the equity issuance mechanism (margins)

PANEL A: determinants of issuance choice by market			
	Full sample	AIM	MM
FSE	-0.019**	-0.010	-0.056*
TSSE	-0.005	0.010	-0.057
LRVTB	-0.033***	-0.024**	-0.082**
DISC.	-0.006	0.004	-0.039
Rel. Leverage	-0.036***	-0.023***	-0.074*
Size	-0.032***	-0.022***	-0.086***
Age	0.006	0.000	0.015
Market	0.162***	-	-
General Corp.	-0.029*	-0.018	-0.078
Investment Purpose	-0.116***	-0.066***	-0.325***
Debt reduction	0.074	-	0.017

PANEL B: determinants of issuance choice by size				
	1st quartile	2nd quartile	3rd quartile	4th quartile
FSE	-0.014**	0.002	-0.028	-0.050
TSSE	-0.018	0.048	0.092*	-0.132
LRVTB	-0.008	-0.056***	-0.016	-0.032
DISC.	-0.008	0.002	-0.012	-0.023
Rel. Leverage	-0.022**	-0.039***	-0.012	-0.053
Size	-	-	-	-
Age	0.009	0.006	-0.011	0.019
Market	0.051***	0.082***	0.182***	0.594***
General Corp.	-0.009	-0.046*	-0.027	-0.025
Investment Purpose	-0.046**	-0.067**	-0.181***	-0.172**
Debt reduction	-	-	0.124	-0.054

Table 2.7 reports the results (margins) from logistic model on the equity issuing mechanism choice. The dependent variable is 1 if the company uses a Private Placement and 0 otherwise. FSE, TSSE and LRVTB are the three RKRV components of M/B ratio (firm-specific error, sector-specific error and growth prospects respectively.) DISC. is the discounting relating to the particular deal, defined according to Hertzel and Smith (1993). Rel. Leverage is the ratio of the firm's leverage at the point of the deal over the average long-term leverage of the industry the firm belongs to. Size is the natural logarithm of the book value of total assets of the company, adjusted for inflation and Age is the natural logarithm of age of the company at the point of the equity issuance. Market is a dummy that equals 1 is the firm is listed on AIM and 0 if listed on London's main market (MM). General Corporate, Investment Purpose and Debt reduction are dummy variables capturing different intended uses of proceeds of the equity funds. In Panel B, 1st, 2nd, 3rd and 4th quartiles are size quartiles.

[38] In our model we use the leverage of the firm at the time of the equity issue divided by the long-run average leverage of the sector the company belongs to. This way we get a relative number for leverage of the firm in terms of the industry long-run leverage value. We name this variable Relative Leverage. We report results using Relative Leverage, however we run the model using simple leverage (results not reported here) and the results remain qualitatively similar.

The numbers reported in Table 2.7[39] are the marginal effects for each of our independent variables. Full results for the actual coefficients of the logistic model can be found in Table 2C.2[40] in Appendix 2C. In Panel A of Table 2.7 we see our findings for the entire sample of deals (Column 1) as well the for the subsamples of firms listed on Alternative Investment Market (AIM) and London primary main market (MM) (Columns 2 and 3 respectively). For the entire sample we see that FSE and LRVTB RKRV components of MTB ratio have a negative and statistically significant impact on the choice between PPs and RIs/OOs. The first implication of these results is related to the level of misvaluation. The more overvalued a firm is the less likely it is to place their equity privately with institutional investors. Institutional investors can assess the fundamental value of the issuing firm's equity and thus they would be on average unwilling to buy overvalued stock. The second implication of the results is related to the long-run growth prospects of the issuing firm. The higher the growth prospects of a firm the less likely it is the company to choose PPs. One potential explanation behind this could be that firms that know they have available (profitable) investment opportunities in the horizon may not be willing to place their equity with institutional investors because PPs on average involve higher discounts (compared to RIs and OOs).

The marginal effect of Rel. Leverage[41] and size is negative. This findings imply that the more leveraged a firm is (taking into consideration the long-run leverage of the industry the company belongs to) and the bigger the size of the firm, the less likely it is to go for a

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39 Table 2.7 reports results based on non-winsorised data. Results based on winsorised data are qualitatively (and some cases quantitatively) the same and are reported in Table 2D (2.7), at Appendix 2D.

40 Table 2D (2C.2) reports the same set of results as 2C.2 using winsorised data (at 1% level in each tail of the distribution).

41 Relative Leverage (Rel. Leverage) is the ratio of the firm's leverage at the point of the deal over the average long-term leverage of the industry the firm belongs to.

Private Placement.[42] One potential explanation for these findings the higher, on average, discount involved in PPs. Firms with high leverage would prefer not to use the PP equity issuing mechanism in order to avoid bearing a heavy discount when placing their equity with the institutional investors. Also, larger and potentially more well-established in the market firms are less likely to choose an equity issuing mechanism where the discount imposed is on average larger compared to RIs or OOs. For small-sized firms, that are not present in the markets for long and information asymmetries related to their quality are high, PPs is the only way to raise equity financing (last resort solution). The dummy variable for market is found to have a positive and highly significant impact on the choice of PPs versus RIs/OOs. It is more likely to go for PPs of equity when a firm is listed on AIM compared to the MM. This result is quite intuitive, since AIM is a platform providing listing solution mainly to small-medium-enterprises (SMEs). Smaller in size firms are more likely to use PPs when they need to raise financing, being willing to bear the high discount in order to obtain the funds needed for their investment plans.

Turning to the results for intended uses of proceeds, the marginal effects for General Corporate purposes and Investment is negative and statistically significant, while the impact of Debt reduction use of proceeds is positive but insignificant. It is important to note here that Multiple uses of proceeds is dropped from the logistic model to avoid multicollinearity problems. The results show that it is less likely for firms to choose PPs when they intend to use the money raised for investment (or if they do not disclose the purpose they need the money for) compared to reporting multiple uses, keeping all other variables constant.[43] In Columns 2 and 3 of the Table 2.7 Panel A we see the results for

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42 Note here that our dependent variable in the logistic model is 1 when we have a Private Placement and 0 otherwise (i.e. when we have either Rights Issues or Open Offers).

43 The numbers for intended uses of proceeds are relative to the variable dropped (captured in the constant term of the model).

AIM and MM separately. Similar patterns are observed in terms of marginal effects (and coefficients) of interest. The magnitude of the effect differs though, with the numbers on MM to appear higher than those on AIM.

In Panel B of Table 2.7 the same results are reported per size quartile. The patterns in the marginal effects appear similar to what we saw in Panel A. Across the four quartiles, different factors appear to play a more important role in some than in other quartiles. For example, although the marginal effect of the market dummy is statistically significant across all the quartiles, the magnitude of the effect (and the coefficient) is higher for firms on the fourth size quartile (0.594). Also, leverage has a significant effect only for the firms belonging to the first and second quartiles. The marginal effect of reporting Investment as intended use of proceeds is significant across all quartiles but the impact on the choice between PPs and RIs/OOs is higher for the third and fourth quartiles.

2.4.3.3 Endogeneity in the use of proceeds

Prior studies on post-issue use of proceeds (for example Kim and Weisbach (2008), Hertzel and Li (2010)) implicitly make their assumption that the different uses of the proceeds raised in equity issues are independent from each other. In other words, by running separate OLS regressions for the year of the issue and three years after the issue for every of the seven potential uses of proceeds reported earlier (cash, inventory, total assets, capital expenditures, reduction in long-term debt, R&D and acquisitions) we assume that companies use the funds raised each in the potential uses independently. The question raised here is how close to reality of firms' investment decisions is this assumption. It is likely that companies raising financing in equity markets use the money for more than one purpose.

In this section we go one step further to the analysis of previous studies and try to

explore how on average equity issuers use the money raised. For this purpose, we run a 7-by-7 system of simultaneous equations for the different uses of proceeds. We also include the variables taken into consideration in our analysis earlier (i.e. firm and sector-specific error, long-run growth prospects, discounting etc.) Since we want to capture the average long-run dependence or independence of the uses of proceeds after the issue, we sum the amounts of cash, inventory, total assets, CAPEX, long-term reduction in debt, R&D and acquisitions over the three-period time after the equity placement and run a 3 stage-least-squares (3SLS) model. The model is:

$$\boldsymbol{y}_i'\boldsymbol{\Gamma} + \boldsymbol{x}_i'\boldsymbol{B} = \boldsymbol{\varepsilon}_i'$$

or

$$[y_1 \quad y_2 \cdots y_M]_i \begin{bmatrix} \gamma_{11} & \gamma_{12} & \cdots & \gamma_{1M} \\ \gamma_{21} & \gamma_{22} & & \gamma_{2M} \\ \vdots & & \ddots & \vdots \\ \gamma_{M1} & \gamma_{M2} & \cdots & \gamma_{MM} \end{bmatrix} +$$

$$[x_1 \quad x_2 \cdots x_K]_i \begin{bmatrix} \beta_{11} & \beta_{12} & \cdots & \beta_{1M} \\ \beta_{21} & \beta_{22} & & \beta_{2M} \\ \vdots & & \ddots & \vdots \\ \beta_{K1} & \beta_{K2} & \cdots & \beta_{KM} \end{bmatrix} = [\varepsilon_1 \quad \varepsilon_2 \cdots \varepsilon_M]_i$$

where $y_1, y_2, \ldots, y_M$ are the M endogenous variables at time t, $x_1, x_2, \ldots, x_K$ are the K exogenous variables at time t including a constant term as well as the lagged value of the dependent variable at time t-1 and $\varepsilon_1, \varepsilon_2, \ldots, \varepsilon_M$ are the error terms, one for each of M=7 equations. Parameter matrices, **Γ** and **B** are estimated from the i = 1, 2, … , N observations, with γ_{ij} = 1 for i = j representing the left hand side variable in each equation (i.e. the dependent variable).

It can be expressed alternatively as:

$$Y_{t,m,k=m} = \alpha_{m,0} + \beta_{m,m=k} Y_{t-1,m,m=k} + \sum_{k=1}^{7} \beta_{m,m\neq(k\leq 7)} Y_{t,m,m\neq(k\leq 7)} + \sum_{k=8}^{14} \beta_{m,k\geq 8} X_{t,m,k\geq 8} + \varepsilon_m; \quad (2.7)$$

where $m = 1,2,\dots,M = 7; k = 1,2,\dots,K = 14$ and $t = 1,\dots,4$;

In the system of equations, m is the index of seven equations, k is the index for the right hand side variables, where k = 1, 2, … 7 are the seven endogenous variables (i.e. the seven potential uses of proceeds), and k = 8, 9, … 14 are the seven exogenous variables and t is the index of time with t = 1 representing the year of the issue.

For example, the regression for Cash would be as follow:

$$\begin{aligned} Y_{t,Cash,k=Cash} = {} & \alpha_{Cash,0} + \beta_{Cash,k=Cash} Y_{t-1,Cash,k=Cash} + \beta_{Cash,k=Inventory} Y_{t,Cash,k=Inventory} \\ & + \beta_{Cash,k=Total\ Assets} Y_{t,Cash,k=Total\ Assets} + \beta_{Cash,k=CAPEX} Y_{t,Cash,k=CAPEX} \\ & + \beta_{Cash,k=LTDR} Y_{t,Cash,k=LTDR} + \beta_{Cash,k=R\&D} Y_{t,Cash,k=R\&D} \\ & + \beta_{Cash,k=ACQ} Y_{t,Cash,k=ACQ} + \\ & + \beta_{Cash,k=FSE} X_{t,Cash,k=FSE} + \beta_{Cash,k=TSSE} X_{t,Cash,k=TSSE} + \beta_{Cash,k=LRVTB} X_{t,Cash,k=LRVTB} \\ & + \beta_{Cash,k=DISC} X_{t,Cash,k=DISC} + \beta_{Cash,k=Primary\ Capital} X_{t,Cash,k=Primary\ Capital} \\ & + \beta_{Cash,k=Other\ Capital} X_{t,Cash,k=Other\ Capital} \\ & + \beta_{t-1,Cash,k=Total\ Assets} X_{t-1,Cash,k=Total\ Assets} + \varepsilon_m;\ t = 1,\dots,4 \end{aligned} \quad (2.8)$$

The model also includes year and industry fixed effects. The results of the model are reported in Table 2.8[44].

Table 2.8 – (In) dependence of uses of proceeds

VARIABLES	(1) Cash	(2) Inventory	(3) Total Assets	(4) CAPEX	(5) LTDR	(6) R&D	(7) ACQ
Cash		-0.016	-0.246	-0.046	-0.015	0.068	0.054
Inventory	0.115		0.083	-0.011	-0.277	0.165	-0.309
Total Assets	-0.005	0.020		0.024	-0.019	-0.000	0.011
CAPEX	-0.573**	-0.079	0.159		0.200*	0.007	-0.115
LTDR	0.186	-0.070**	0.191	-0.050		-0.021	0.045
R&D	-0.069	0.006	-0.197*	0.004	-0.038		0.048
ACQ	-0.254**	0.018	-0.313*	0.024	0.372***	0.050	
FSE	-0.061	-0.009	-0.135	0.036**	-0.037	-0.004	0.036
TSSE	-0.068	0.017	-0.584***	0.025	0.097	-0.185***	-0.028
LRVTB	0.085	-0.079***	0.312**	-0.019	-0.025	0.025	-0.095
DISC	0.144*	-0.009	0.023	0.006	0.027	-0.005	-0.055
PRIM CAP	1.935***	0.171	3.492***	0.246*	-0.047	0.395**	0.321
OTHER CAP	0.209***	0.024**	0.476***	0.023*	0.018	0.025*	0.015
TA (0)	-0.052	-0.016	-0.072	-0.010	-0.008	-0.010	-0.030
$Cash_{t-1}$	1.866***						
$Inventory_{t-1}$		2.237***					
$Total\ Asset_{t-1}$			2.674***				
$CAPEX_{t-1}$				6.069***			
$LTDR_{t-1}$					5.816***		
$R\&D_{t-1}$						6.557***	
ACQ_{t-1}							3.345***
N	218	218	218	218	218	218	218
Adj. R^2	0.532	0.638	0.761	0.796	0.816	0.935	0.845

Table 2.8 presents results from a system of seven simultaneous equations related to the seven uses of proceeds raised in equity deals in our sample. The seven uses of proceeds are: Cash, Inventory, Total Assets, Capital expenditures (CAPEX), reduction in long-term debt (LTDR), research and development (R&D) and acquisitions (ACQ). FSE, TSSE and LRVTB are the three RKRV components of M/B ratio (firm-specific error, sector-specific error and growth prospects respectively.) DISC. is the discounting relating to the particular deal, defined according to Hertzel and Smith (1993). PRIM CAP is related to the capital the company raise from the equity market, OTHER CAP are other sources of internally generated funds, TA (0) is the total assets at the year-end before the equity issue.

[44] Table 2.8 reports results based on non-winsorised data. Results based on winsorised data are qualitatively (and some cases quantitatively) the same and are reported in Table 2D (2.8), at Appendix 2D.

Interestingly, we see that some of the coefficients for the different uses of proceeds are significant. This is an indication that indeed there is dependence between different ways of using the proceeds raised in equity issues. For example, we see a negative and significant at 5% relationship between cash and CAPEX (-0.573). This means that the more firms invest in capital expenditures the less they use for increasing their cash. Similar pattern is observed for cash and money used for acquisitions, with a negative (-0.254) and statistically significant at 5% coefficient. There is also a positive relationship between discounting and changes in cash. The higher the discount with which the equity is placed with institutional investors the bigger the change in cash the company keeps. For inventory, we see a negative relationship between money used to reduce long-term debt and changes in inventory. Also, in the case of inventory there is a negative and significant at 1% relationship between long-run growth prospects of the firm and changes in inventory, which means that the higher the growth prospects of the issuing firm the less they spend for inventory. Furthermore, in Table 8 we see that the more companies spend for R&D and acquisitions the less they spend in total assets (coefficients are -0.197 and -0.313 respectively, both significant at 10% level). In addition, the higher the growth prospects of the firm the more they spend for total assets (investment). Regarding capital expenditures we find that the more overvalued the firms are the more they spend on CAPEX (0.036 significant at 5% level). Also, the relationship between acquisitions (0.372) and CAPEX (0.200) and reduction in long-term debt is found positive and significant at 1% and 10% level respectively. It is also worth noting that the coefficients of Primary capital raised and Other Capital (internally generated funds) are positive and mostly significant. The lagged coefficients[45] are used to solve the identification problem of running the simultaneous equations and are all found positive and highly significant.

[45] The lagged numbers used in Table 8 are the values for the use of proceeds on the year of the issue.

The results presented here are for the entire sample of deals in our sample (i.e. PPs, RIs, OOs). We also report the same set of results only for the subsample of PPs in Table 2C.3 of Appendix 2C[46]. The results are similar to the ones in Table 2.8, given the fact that PPs are dominant in our sample in term of number of deals. It is important to acknowledge here that the number of observations used in the model of simultaneous equations is quite small, especially compared to the initial number of observations we had available. This might potentially drive the high adjusted R-squared numbers we see in Table 2.8. The analysis conducted in Table 2.8, although not the main focus of our study, proposes a new way of approaching the uses of proceeds raised in equity issues and it is potentially worth of further investigation in a future study.

2.5 Conclusion

This chapter explored the role of misvaluation and growth for a sample of 2,860 UK PP and SEO deals during 1994-2014. It employs a modified version of the methodological approach used by Rhodes-Kropf et al., (2005) to decompose M/B ratios into two misvaluation components and a long run growth component. The results reveal that PP and SEO firms differ significantly both in terms of the overall M/B ratios and the three components of the M/B decomposition. They show that overvalued firms engage in SEOs by issuing equity to take advantage of their overvalued stock. Thus they can obtain financing on better terms compared to times when their stock is undervalued or correctly valued, without necessarily having growth prospects. On the other hand, PP issuers are, on average, undervalued and have high growth prospects. This explains why they are attractive to institutional investors.

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[46] Table 2D (2C.3) reports the same set of results as 2C.3 using winsorised data (at 1% level in each tail of the distribution).

We find that the more misvalued the PP firms, the more they invest in the long term in total assets, capital expenditures but not R&D. By contrast Hertzel and Li (2010) find that growth prospects are the main driver of the uses of proceeds. However, in many cases misvaluation is insignificant. Finally we conclude that misvaluation induces PP firms to invest in long run projects. For firms issuing equity through Rights Issues or Open Offers, misvaluation seems to be positively associated with increases in total assets, and CAPEX but not R&D.

APPENDIX 2A

Table 2A.1 - Sample distribution across offering technique (1994-2014)

Offering Technique	
Accelerated Book built Open Offer	1
Accelerated Book built Placement	4
Accelerated Book built Placement Firm Commitment	1
Capitalisation Issue Rights	1
Firm Commitment Placement	5
Offer for Subscription Open Offer	1
Offer for Subscription Placement	2
Open Offer	250
Open Offer Best Efforts	16
Open Offer Firm Commitment	13
Open Offer Offer for Subscription	1
Placement	2,736
Placement Accelerated Book built	5
Placement Accelerated Book built Firm Commitment	5
Placement Best Efforts	70
Placement Block Trade Firm Commitment	1
Placement Firm Commitment	217
Placement Firm Commitment Accelerated Book built	3
Placement Firm Commitment Offer for Sale	1
Placement Offer for Sale	5
Placement Offer for Subscription	11
Placement Offer for Subscription Best Efforts	1
Placement Offer for Subscription Firm Commitment	1
Placement Vendor Placing	3
Qualified Inst. Placement	1
Qualified Inst. Placement Firm Commitment	1
Rights	270
Rights Best Efforts	1
Rights Firm Commitment	4
Total	3,631

Table 2A.1 shows the distribution of the sample of deals taking place in the UK during the period 1994-2014 across different offering techniques.

Table 2A.2 - Sample distribution across offering technique

All M/B components available and with discounting data

Offering Technique	
Accelerated Book built Placement	4
Accelerated Book built Placement Firm Commitment	1
Capitalisation Issue Rights	1
Firm Commitment Placement	5
Offer for Subscription Open Offer	1
Offer for Subscription Placement	2
Open Offer	218
Open Offer Best Efforts	13
Open Offer Firm Commitment	12
Open Offer for Subscription	1
Placement	2,082
Placement Accelerated Book built	5
Placement Accelerated Book built Firm Commitment	5
Placement Best Efforts	59
Placement Block Trade Firm Commitment	1
Placement Firm Commitment	188
Placement Firm Commitment Accelerated Book built	3
Placement Firm Commitment Offer for sale	1
Placement Offer for sale	4
Placement Offer for subscription	11
Placement Offer for subscription Best efforts	1
Placement Offer for subscription Firm Commitment	1
Placement Vendor Placing	2
Qualified Inst. Placement Firm Commitment	1
Rights	233
Rights Best Efforts	1
Rights Firm Commitment	4
Total	2,860

Table 2A.2 shows the distribution of the sample of deals taking place in the UK during the period 1994-2014 across different offering techniques for the deals where all the 3 components from Rhodes-Kropf et al. (2005) M/B decomposition and discounting data are available.

Table 2A.3 – Sample summary statistics pre- and post-crisis

PANEL A: Pre-crisis

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
		Private Placements (PPs)					Rights Issues(RIs) Open Offers (OOs)				(4) vs.(9)	(5) vs.(10)
	N	Min	Max	Mean	Median	N	Min	Max	Mean	Median	t-diff in means	χ-diff in medians
Size	729	-0.470	3.409	1.359	1.355	312	-0.208	3.408	1.851	1.790	9.470	0.000
Leverage	728	0.000	0.848	0.163	0.110	311	0.000	0.848	0.230	0.209	5.348	0.000
Tangibility	718	0.000	0.929	0.241	0.127	312	0.000	0.929	0.321	0.218	3.991	0.000
Profitability	729	-4.432	0.334	-0.216	0.010	312	-4.136	0.334	-0.108	0.036	2.867	0.017
ROA	720	-1.993	0.417	-0.145	0.018	310	-1.993	0.417	-0.078	0.041	2.752	0.016
ROE	729	-9.302	9.224	-0.186	0.022	312	-9.302	9.224	-0.012	0.043	1.477	0.034
Current ratio	650	0.085	35.364	2.920	1.420	277	0.085	35.364	2.136	1.270	-2.722	0.065
Quick ratio	650	0.056	35.364	2.665	1.078	277	0.056	35.364	1.829	0.928	-2.885	0.001
TA turnover	729	0.000	3.472	0.786	0.521	312	0.000	3.472	0.799	0.589	0.259	0.529

PANEL B: Pre-crisis

	(1)	(2)	(4)	(5)	(6)	(7)
	Private Placements (PPs)			Rights Issues(RIs) Open Offers (OOs)		
	Standard Deviation	5% percentile	95% percentile	Standard Deviation	5% percentile	95% percentile
Size	0.722	0.279	2.595	0.787	0.581	3.313
Leverage	0.178	0.000	0.505	0.189	0.000	0.575
Tangibility	0.2674	0.002	0.855	0.308	0.003	0.903
Profitability	0.716	-1.488	0.203	0.465	-0.681	0.131
ROA	0.440	-1.062	0.250	0.324	-0.724	0.165
ROE	1.959	-2.115	0.802	1.639	-1.658	0.702
Current ratio	4.869	0.417	9.975	3.589	0.321	6.801
Quick ratio	4.890	0.311	9.975	3.619	0.245	6.801
TA turnover	0.802	0.000	2.471	0.714	0.024	2.180

Table 2A.3 provides the same information as Table 2.2 for the period before and after the recent financial crisis. Panels A and B has descriptive statistics of the sample pre-crisis and Panels C and D post-crisis. Based on the sample (1994-2014), we define as pre-crisis period the years 1994-2007 and post-crisis the years 2008-2014. Size is the logarithm of Total Assets. Leverage (book leverage) is the ratio of total debt over total assets. Tangibility is the ratio of Property, Plant and Equipment (PPE) over Total Assets. Profitability is the ratio of Earnings Before Interest and Taxes (EBIT) over Total Assets. ROA is the ratio of $EBIT_t$ over ((Total $Assets_t$ + Total $Assets_{t-1}$)/2). ROE is the ratio of Net Income over Equity. The liquidity ratios reported here, current ratio and quick ratio are the ratios of Current Assets over Current Liabilities and (Current Assets – Inventory) over Current Liabilities respectively. TA turnover is the ratio of sales over Total Assets. The last two columns of the Panels A and C provide tests for equality of means (Column 11) and medians (Column 12).

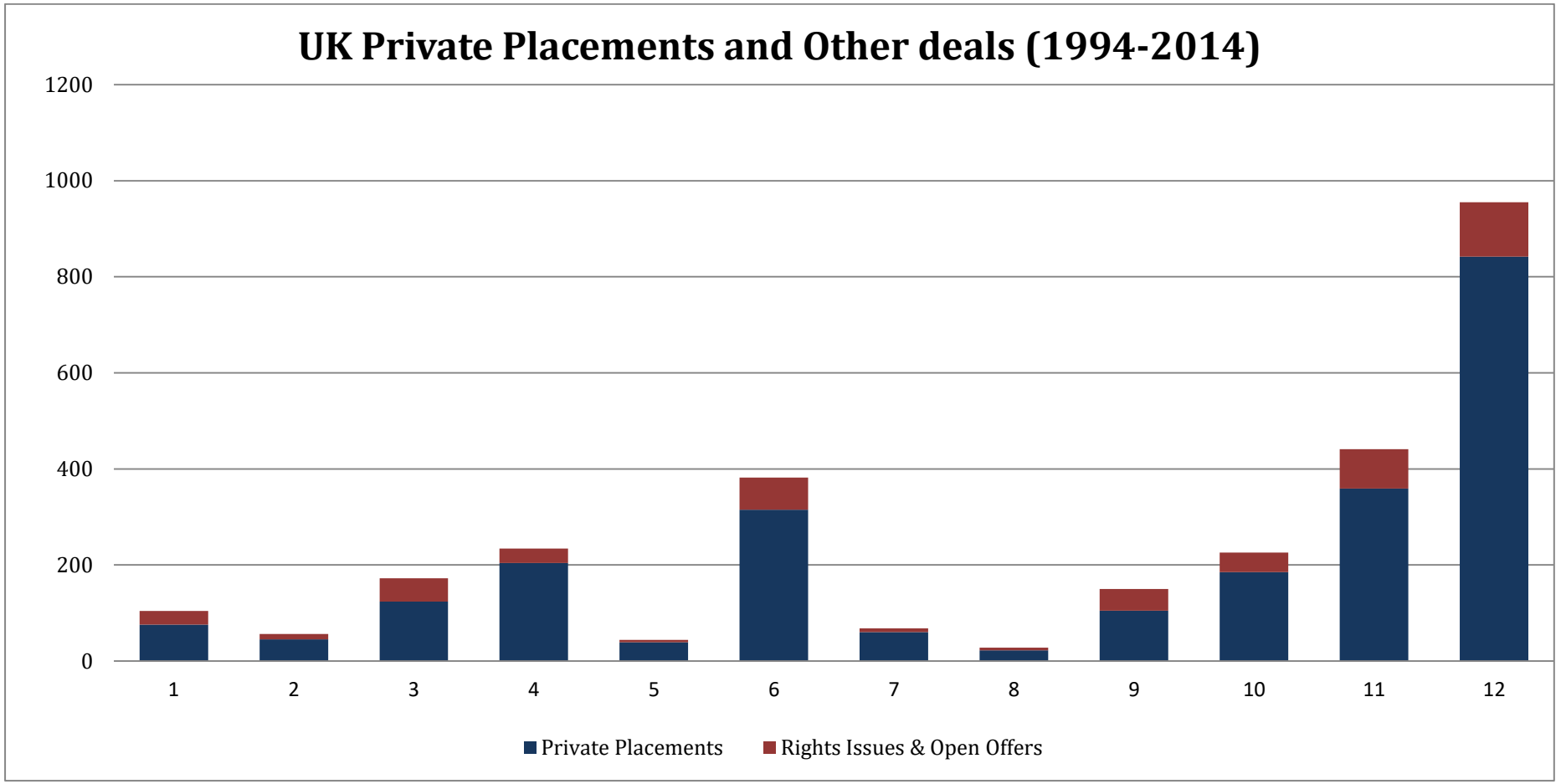
PANEL C: Post-crisis

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Private Placements (PPs)					Rights Issues(RIs) Open Offers (OOs)					(4) vs.(9)	(5) vs.(10)
	N	Min	Max	Mean	Median	N	Min	Max	Mean	Median	t-diff in means	χ-diff in medians
Log(TA)	1,137	-0.470	3.408	1.062	1.049	41	0.463	3.186	1.509	1.410	4.568	0.000
Leverage	1,129	0.000	0.848	0.121	0.042	41	0.000	0.528	0.118	0.051	-0.154	0.991
Tangibility	1,072	0.000	0.929	0.144	0.033	41	0.000	0.929	0.194	0.062	1.212	0.201
Profitability	1,137	-4.432	0.334	-0.342	-0.129	41	-1.724	0.193	-0.202	-0.168	2.620	0.759
ROA	1,098	-1.993	0.417	-0.273	-0.146	41	-0.985	0.218	-0.179	-0.164	2.636	0.755
ROE	1,138	-9.302	9.224	-0.424	-0.172	41	-5.040	4.254	-0.401	-0.171	0.116	0.987
Current ratio	1,056	0.085	35.364	4.469	1.608	39	0.253	35.364	5.929	2.041	0.990	0.995
Quick ratio	1,056	0.056	35.364	4.275	1.358	39	0.253	35.364	5.775	1.544	1.009	0.740
TA turnover	1,137	0.000	3.472	0.415	0.114	41	0.000	3.421	0.641	0.242	1.554	0.525

PANEL D: Post-crisis

	(1)	(2)	(4)	(5)	(6)	(7)
	Private Placements (PPs)			Rights Issues(RIs) Open Offers (OOs)		
	Standard Deviation	5% percentile	95% percentile	Standard Deviation	5% percentile	95% percentile
Log(TA)	0.635	-0.022	1.994	0.616	0.594	2.833
Leverage	0.184	0.000	0.522	0.146	0.000	0.366
Tangibility	0.226	0.000	0.720	0.261	0.000	0.718
Profitability	0.704	-1.439	0.106	0.314	-0.667	0.079
ROA	0.412	-1.063	0.1326	0.215	-0.486	0.069
ROE	1.815	-2.890	0.464	1.242	-2.618	0.150
Current ratio	6.833	0.244	20.827	9.116	0.441	35.364
Quick ratio	6.842	0.158	20.827	9.185	0.332	35.364
TA turnover	0.630	0.000	1.669	0.921	0.000	2.897

Figure 2A.1-Distribution of sample across sectors



APPENDIX 2B

Table 2B.1 - Estimates of the RKRV valuation model by Fama and French 12-industry classification

	1	2	3	4	5	6	7	8	9	10	11	12
PANEL A												
Model 1: $m_{it} = \alpha_{0jt} + \alpha_{1jt} b_{it} + \varepsilon_i$												
$E_t(\hat{\alpha}_0)$	0.50	0.47	0.52	0.67	0.84	1.38	1.24	0.04	0.69	1.16	0.61	1.04
	(0.07)	(0.08)	(0.07)	(0.10)	(0.13)	(0.08)	(0.16)	(0.11)	(0.08)	(0.09)	(0.04)	(0.06)
$E_t(\hat{\alpha}_1)$	1.01	0.98	0.99	0.92	0.97	0.83	0.95	1.08	0.96	0.94	0.91	0.85
	(0.01)	(0.03)	(0.01)	(0.01)	(0.03)	(0.02)	(0.03)	(0.02)	(0.01)	(0.02)	(0.01)	(0.01)
$AdjR^2$	0.82	0.72	0.83	0.83	0.79	0.66	0.85	0.89	0.79	0.78	0.85	0.76
PANEL B												
Model 2: $m_{it} = \alpha_{0jt} + \alpha_{1jt} b_{it} + \alpha_{2jt} ni_{it}^{+} + \alpha_{3jt} (I(<0) ni^{+})_{it} + \varepsilon_i$												
$E_t(\hat{\alpha}_0)$	1.27	0.99	1.31	1.28	1.52	1.83	2.02	1.35	1.56	1.69	1.31	1.66
	(0.08)	(0.12)	(0.07)	(0.11)	(0.18)	(0.08)	(0.17)	(0.18)	(0.08)	(0.11)	(0.05)	(0.05)
$E_t(\hat{\alpha}_1)$	0.63	0.64	0.60	0.69	0.58	0.57	0.57	0.43	0.54	0.59	0.59	0.53
	(0.02)	(0.04)	(0.02)	(0.03)	(0.06)	(0.03)	(0.05)	(0.08)	(0.03)	(0.04)	(0.01)	(0.02)
$E_t(\hat{\alpha}_2)$	0.40	0.41	0.42	0.26	0.42	0.35	0.42	0.63	0.45	0.43	0.36	0.38
	(0.02)	(0.04)	(0.02)	(0.02)	(0.05)	(0.03)	(0.05)	(0.08)	(0.02)	(0.03)	(0.02)	(0.02)
$E_t(\hat{\alpha}_3)$	-0.17	0.09	-0.20	-0.31	-0.01	-0.17	-0.71	0.06	-0.34	-0.07	-0.20	-0.36
	(0.06)	(0.10)	(0.04)	(0.14)	(0.14)	(0.05)	(0.10)	(0.10)	(0.04)	(0.09)	(0.04)	(0.04)
$AdjR^2$	0.87	0.81	0.89	0.86	0.85	0.74	0.90	0.93	0.87	0.86	0.89	0.82
PANEL C												
Model 3 : $m_{it} = \alpha_{0jt} + \alpha_{1jt} b_{it} + \alpha_{2jt} ni_{it}^{+} + \alpha_{3jt} (I(<0) ni^{+})_{it} + \alpha_{4jt} Lev_{it} + \varepsilon_i$												
$E_t(\hat{\alpha}_0)$	1.98	1.87	1.92	1.76	2.26	2.50	2.73	1.62	2.19	2.26	1.49	2.27
	(0.08)	(0.12)	(0.07)	(0.12)	(0.17)	(0.09)	(0.12)	(0.19)	(0.07)	(0.10)	(0.05)	(0.08)
$E_t(\hat{\alpha}_1)$	0.65	0.70	0.67	0.69	0.71	0.59	0.56	0.50	0.58	0.63	0.61	0.56
	(0.02)	(0.04)	(0.02)	(0.02)	(0.06)	(0.03)	(0.04)	(0.08)	(0.03)	(0.04)	(0.02)	(0.02)
$E_t(\hat{\alpha}_2)$	0.39	0.34	0.37	0.30	0.30	0.32	0.43	0.59	0.42	0.37	0.37	0.38
	(0.02)	(0.04)	(0.02)	(0.02)	(0.05)	(0.02)	(0.04)	(0.07)	(0.02)	(0.03)	(0.02)	(0.02)
$E_t(\hat{\alpha}_3)$	-0.03	0.10	-0.07	-0.40	-0.14	-0.21	-0.57	0.01	-0.24	-0.24	-0.22	-0.42
	(0.05)	(0.08)	(0.05)	(0.10)	(0.11)	(0.05)	(0.09)	(0.11)	(0.04)	(0.06)	(0.04)	(0.03)
$E_t(\hat{\alpha}_4)$	-1.93	-2.29	-1.90	-1.70	-2.54	-2.58	-2.25	-1.04	-1.83	-2.29	-0.52	-1.73
	(0.11)	(0.18)	(0.08)	(0.19)	(0.12)	(0.11)	(0.24)	(0.20)	(0.07)	(0.15)	(0.04)	(0.07)
$AdjR^2$	0.90	0.88	0.92	0.89	0.90	0.82	0.92	0.94	0.90	0.89	0.90	0.86

APPENDIX 2C

Table 2C.1– Pre- and post-crisis use of proceeds for PPs

		PRE-CRISIS						POST-CRISIS					
		FSE	TSSE	LRVTB	DISC.	N	Adj.R^2	FSE	TSSE	LRVTB	DISC.	N	Adj.R^2
Y	t	β 1	β 2	β 3									
Δ Cash	1	0.07***	0.06**	-0.03	-0.00	734	0.10	0.04**	0.05	-0.02	0.03	1,244	0.16
	2	0.06***	-0.01	-0.02	0.01	612	0.16	0.02	-0.02	-0.04	0.04	1,120	0.34
	3	0.03	-0.10	-0.01	-0.01	529	0.25	0.02	-0.07*	-0.02	0.03	966	0.29
	4	0.01	-0.17*	-0.03	-0.02	454	0.33	-0.00	-0.10*	0.03	0.01	717	0.32
Δ INV.	1	0.02**	0.02	-0.00	0.00	764	0.09	0.00	0.01***	-0.00	-0.00**	1,264	0.03
	2	0.05*	0.03	0.00	0.01	625	0.15	0.01*	0.01*	-0.01	-0.00	1,135	0.05
	3	0.06*	0.05	-0.01	0.01	535	0.16	0.00	0.01	-0.00	-0.01	982	0.01
	4	0.07**	0.04	-0.01	0.00	457	0.13	0.00	0.00	-0.01	0.00	726	0.04
Δ TA	1	0.14***	0.03	-0.06	-0.02	779	0.23	0.11***	0.10	0.04	-0.05	1,281	0.24
	2	0.19***	0.05	-0.04	-0.02	639	0.50	0.11**	0.10**	0.11	-0.05	1,151	0.43
	3	0.22***	0.03	-0.02	-0.03	549	0.52	0.09***	0.10	0.16**	-0.11**	996	0.46
	4	0.21***	-0.06	0.01	-0.05	465	0.58	0.04	0.03	0.16*	-0.09**	736	0.54
Σ CAPEX	1	0.01	-0.01	-0.02	-0.00	779	0.15	0.01*	-0.02	-0.01	-0.01	1,229	0.20
	2	0.02	0.02	-0.01	0.00	639	0.25	0.03***	-0.03	-0.01	-0.01*	1,073	0.25
	3	0.02	0.05	-0.03	0.01	549	0.32	0.05***	-0.01	-0.00	-0.01	904	0.35
	4	0.02	0.12*	-0.06	0.01	465	0.40	0.04**	-0.01	-0.01	0.02	661	0.36
Σ R&D	1	-0.02***	-0.04**	0.04***	0.00	203	0.41	0.01	0.01	0.06***	-0.01	325	0.30
	2	-0.03	-0.11**	0.10***	0.01	145	0.36	0.03	0.02	0.07**	0.02	263	0.33
	3	-0.04	-0.09	0.12***	0.01	119	0.40	0.03	-0.04	0.11**	0.09**	201	0.39
	4	-0.04	-0.06	0.08	-0.02	94	0.32	0.02	-0.05	0.14*	0.10*	155	0.41

TABLE 2C.1 – Continued

Σ ACQ	1	-0.04*	-0.02	-0.02	-0.02	567	0.12	-0.00	-0.02	-0.00	-0.03	1,107	0.06
	2	-0.07	-0.00	-0.00	0.02	439	0.20	-0.02	-0.06*	-0.01	-0.03	984	0.13
	3	-0.08*	0.02	-0.07	0.05	371	0.21	-0.04	-0.03	-0.05*	-0.07	823	0.18
	4	-0.14***	0.01	-0.16	-0.02	295	0.22	-0.05	-0.14	-0.05	-0.09	597	0.22
Σ LTRD	1	-0.05	-0.03	-0.08	-0.01	580	0.05	-0.02**	-0.09**	0.01	-0.08*	1,094	0.03
	2	-0.13**	-0.10	-0.08	-0.03	460	0.09	-0.05*	-0.19**	-0.01	-0.11	924	0.04
	3	-0.11*	-0.08	-0.15*	-0.04	393	0.14	-0.06*	-0.17**	0.00	-0.17	766	0.06
	4	-0.16*	-0.04	-0.19	-0.08	327	0.19	-0.05	-0.20	0.02	-0.14	557	0.05

Datastream definitions of variables used: Cash represents money available for use in the normal operations of the company. It is the most liquid of all of the company's assets. Inventory represent tangible items or merchandise net of advances and obsolescence acquired for either (1) resale directly or (2) included in the production of finished goods manufactured for sale in the normal course of operation. Total Assets represent the sum of total current assets, long term receivables, investment in unconsolidated subsidiaries, other investments, net property plant and equipment and other assets. Capital expenditures (CAPEX) represent the funds used to acquire fixed assets other than those associated with acquisitions. R&D represents all direct and indirect costs related to the creation and development of new processes, techniques, applications and products with commercial possibilities. Acquisitions represent assets acquired through pooling of interests or mergers. It does not include capital expenditures of acquired companies. Reduction in long term debt (LTRD) represents funds used to reduce long term debt, capitalized lease obligations and includes decrease in debt from the conversion of debentures into common stock. For our analysis we consider 1994-2007 as pre-crisis and 2008-2014 as post-crisis periods. ***, ** and * are significance levels of 1%, 5% and 10% respectively. t represents different points in time: t=1 is the year of the equity issue, t=2 is the year after the issue and t=3, t=4 are the second and third years after the equity issue. FSE, TSSE, LRVTB are the three parts of the RKRV (2005) M/B ratio decompositions and DISC. is the discounting relating to the particular deal, defined according to Hertzel and Smith (1993). Standard errors are adjusted for year and firm-level clustering.

Table 2C.2 – Choice of the equity issuance mechanism

PANEL A: model of choice by market			
	Entire sample	AIM	MM
FSE	-0.156**	-0.139	-0.159*
TSSE	-0.040	0.149	-0.162
LRVTB	-0.264***	-0.353**	-0.235**
DISC.	-0.049	0.065	-0.111
Rel. Leverage	-0.286***	-0.327***	-0.211*
Size	-0.259***	-0.326***	-0.246***
Age	0.044	0.006	0.042
Market	1.307***	-	-
General Corp.	-0.235*	-0.262	-0.222
Investment Purp.	-0.934***	-0.959***	-0.929***
Debt reduction	0.597	-	0.048
Constant	2.466***	4.111***	2.301***
N	2,836	1,853	937
Pseudo-R^2	0.174	0.046	0.055

PANEL B: model of choice by size				
	1st quartile	2nd quartile	3rd quartile	4th quartile
FSE	-0.340**	0.020	-0.178	-0.165
TSSE	-0.422	0.604	0.584*	-0.435
LRVTB	-0.187	-0.706***	-0.100	-0.105
DISC.	-0.180	0.028	-0.073	-0.077
Rel. Leverage	-0.518**	-0.494***	-0.075	-0.175
Size	-	-	-	-
Age	0.208	0.071	-0.070	0.062
Market	1.198***	1.022***	1.152***	1.952***
General Corp.	-0.221	-0.575*	-0.172	-0.083
Investment Purp.	-1.080**	-0.836**	-1.147***	-0.566**
Debt reduction	-	-	0.784	-0.176
Constant	2.512***	2.975***	1.476***	0.597
N	684	690	710	713
Pseudo-R^2	0.072	0.107	0.095	0.110

Table 2C.2 reports the results from logistic model on the equity issuing mechanism choice. The dependent variable is 1 if the company uses a Private Placement and 0 otherwise. FSE, TSSE and LRVTB are the three RKRV components of MTB ratio (firm-specific error, sector-specific error and growth prospects respectively.) DISC. is the discounting relating to the particular deal, defined according to Hertzel and Smith (1993). Rel. Leverage is the ratio of the firm's leverage at the point of the deal over the average long-term leverage of the industry the firm belongs to. Size is the natural logarithm of the book value of total assets of the company, adjusted for inflation and Age is the natural logarithm of age of the company at the point of the equity issuance. Market is a dummy that equals 1 is the firm is listed on AIM and 0 if listed on London's main market (MM). General Corporate, Investment Purpose and Debt reduction are dummy variables capturing different intended uses of proceeds of the equity funds.

Table 2C.3– Endogeneity in uses of proceeds

VARIABLES	(1) Cash	(2) Inventory	(3) Total Assets	(4) CAPEX	(5) LTDR	(6) R&D	(7) ACQ
Cash		-0.004	-0.186	-0.017	0.006	0.083*	0.054
Inventory	-0.068		0.090	0.061	-0.166	0.191	-0.396
Total Assets	0.016	-0.008		0.014	-0.045	0.005	0.031
CAPEX	-0.742**	0.003	0.285		0.273*	0.057	-0.158
LTDR	0.245	-0.100**	0.119	-0.075**		-0.046	0.041
R&D	-0.086	-0.015	-0.224**	-0.007	-0.043		0.043
ACQ	-0.343*	0.073	-0.259	0.106**	0.505***	0.088	
FSE	-0.065	-0.023	-0.182**	0.040**	-0.068	-0.020	0.058
TSSE	-0.128	-0.022	-0.732***	-0.011	0.026	-0.201***	0.043
LRVTB	0.017	-0.080***	0.143	-0.012	-0.020	0.017	-0.144**
DISC	0.225**	-0.000	0.122	0.001	-0.005	-0.013	0.005
PRIM CAP	2.259***	0.292*	3.285***	0.157	-0.115	0.142	0.317
OTHER CAP	0.243***	0.040***	0.555***	0.020	0.026	0.029	-0.003
TA (0)	-0.016	0.005	-0.080	-0.005	-0.013	-0.021	-0.042
$Cash_{t-1}$	1.998***						
$Inventory_{t-1}$		2.231***					
$Total\ Asset_{t-1}$			2.598***				
$CAPEX_{t-1}$				5.793***			
$LTDR_{t-1}$					5.638***		
$R\&D_{t-1}$						6.577***	
ACQ_{t-1}							3.231***
N	170	170	170	170	170	170	170
Adj. R^2	0.570	0.645	0.807	0.801	0.824	0.939	0.833

Table 2C.3 presents results from a system of seven simultaneous equations related to the seven uses of proceeds raised in equity deals in our sample. The seven uses of proceeds are: Cash, Inventory, Total Assets, Capital expenditures (CAPEX), reduction in long-term debt (LTDR), research and development (R&D) and acquisitions (ACQ). FSE, TSSE and LRVTB are the three RKRV components of MTB ratio (firm-specific error, sector-specific error and growth prospects respectively.) DISC. is the discounting relating to the particular deal, defined according to Hertzel and Smith (1993). PRIM CAP is related to the capital the company raise from the equity market, OTHER CAP are other sources of internally generated funds, TA (0) is the Total assets at the year before the equity issue.

APPENDIX 2D

Table 2D (2.4) – M/B & uses of proceeds: PPs

		FSE	TSSE	LRVTB	DISC.	PRIMARY CAP	OTHER CAP	TOTAL ASSETS	N	Adj.R^2
Y	t	β 1	β 2	β 3		β 4	β 5	β 6		
Δ Cash	1	0.05***	0.07***	-0.01	0.01	0.26***	0.02	-0.00	1,978	0.15
	2	0.03**	-0.02	-0.01	0.02*	0.51***	0.10***	0.01	1,732	0.26
	3	0.01	-0.12**	-0.02	0.01	0.58***	0.12***	-0.01	1,495	0.30
	4	-0.01	-0.19**	-0.02	-0.01	0.55***	0.20***	-0.01	1,171	0.31
Δ Inventory	1	0.01**	0.01*	-0.00	-0.00	0.00	0.00	-0.00	2,028	0.08
	2	0.02**	0.03**	-0.01*	0.00	0.04*	0.01	-0.01*	1,760	0.15
	3	0.02*	0.04**	-0.02**	-0.00	0.07**	0.01*	-0.01*	1,517	0.16
	4	0.03*	0.04*	-0.03**	-0.00	0.06	0.02***	-0.02*	1,183	0.19
Δ Total Assets	1	0.13***	0.14*	0.02	-0.03	0.55***	0.16***	-0.01	2,060	0.29
	2	0.14***	0.15	0.07	-0.02	1.11***	0.37***	-0.00	1,790	0.48
	3	0.15***	0.12	0.09	-0.07*	1.19***	0.42***	-0.01	1,545	0.50
	4	0.12**	0.05	0.08	-0.07**	1.21***	0.56***	-0.03	1,201	0.56
Σ CAPEX	1	0.02***	0.00	-0.01	-0.00	0.06***	0.03***	-0.00	2,008	0.16
	2	0.03***	0.00	-0.01	-0.00	0.16***	0.07***	0.00	1,712	0.26
	3	0.05***	0.03	-0.01	-0.00	0.31***	0.08***	0.01	1,453	0.33
	4	0.05***	0.06	-0.02	0.01	0.49***	0.12***	0.01	1,126	0.39
Σ R&D	1	0.01	-0.01	0.05***	-0.01	0.03	-0.02	-0.01	528	0.31
	2	0.02	-0.06	0.08***	0.01	0.17**	-0.03	-0.01	408	0.33
	3	0.03	-0.14	0.13***	0.04	0.23	0.02	-0.00	320	0.37
	4	0.02	-0.14	0.15***	0.03	0.36*	0.05	-0.02	249	0.35
Σ Acquisition	1	-0.01	-0.02	-0.00	-0.02	0.14***	0.04*	-0.01	1,674	0.12
	2	-0.02	-0.02	-0.01	-0.01	0.33***	0.08***	-0.01	1,423	0.19
	3	-0.04	0.03	-0.07**	-0.02	0.52***	0.10***	-0.02**	1,194	0.22
	4	-0.05*	-0.03	-0.12***	-0.04	0.72***	0.14***	-0.05***	892	0.25
Σ LTRD	1	-0.02	-0.05*	-0.02	-0.03**	0.08*	0.01	-0.03***	1,674	0.04
	2	-0.05**	-0.11**	-0.04**	-0.06*	0.29**	0.01	-0.03**	1,384	0.05
	3	-0.05*	-0.10*	-0.07**	-0.09**	0.44***	0.04**	-0.04**	1,159	0.09
	4	-0.06	-0.09	-0.12**	-0.09**	0.58**	0.08***	-0.05***	884	0.11

Datastream definitions of variables used: Cash represents money available for use in the normal operations of the company. It is the most liquid of all of the company's assets. Inventory represent tangible items or merchandise net of advances and obsolescence acquired for either (1) resale directly or (2) included in the production of finished goods manufactured for sale in the normal course of operation. Total Assets represent the sum of total current assets, long term receivables, investment in unconsolidated subsidiaries, other investments, net property plant and equipment and other assets. Capital expenditures (CAPEX) represent the funds used to acquire fixed assets other than those associated with acquisitions. R&D represents all direct and indirect costs related to the creation and development of new processes, techniques, applications and products with commercial possibilities. Acquisitions represent assets acquired through pooling of interests or mergers. It does not include capital expenditures of acquired companies. Reduction in long term debt (LTRD) represents funds used to reduce long term debt, capitalized lease obligations and includes decrease in debt from the conversion of debentures into common stock. ***, ** and * are significance levels of 1%, 5% and 10% respectively. t represents different points in time: t=1 is the year of the equity issue, t=2 is the year after the issue and t=3, t=4 are the second and third years after the equity issue. FSE, TSSE, LRVTB are the three parts of the RKRV (2005) M/B ratio decompositions and DISC. is the discounting relating to the particular deal, defined according to Hertzel and Smith (1993). Winsorised data at 1% of each tail of the distribution are used in this Table. Standard errors are adjusted for year and firm-level clustering.

Table 2D (2.5) – M/B and uses of proceeds: RIs & OOs

		FSE	TSSE	LRVTB	DISC.	PRIMARY CAP	OTHER CAP	TOTAL ASSETS	N	Adj.R^2
Y	t	β 1	β 2	β 3		β 4	β 5	β 6		
Δ Cash	1	0.04	0.07*	0.05**	-0.01	0.04	0.04	-0.01	417	0.02
	2	0.02	0.17***	0.10***	0.03	0.17	0.09***	-0.02*	351	0.20
	3	0.01	-0.03	0.08***	0.00	0.21	0.12***	-0.03*	298	0.24
	4	0.02	0.02	0.08**	-0.00	0.33	0.13***	-0.03	246	0.26
Δ Inventory	1	0.01	0.03***	0.01	-0.00	-0.00	-0.01	0.00	418	0.12
	2	0.02**	0.05***	0.01	-0.00	-0.03	0.03***	-0.01	349	0.12
	3	0.02	0.02	0.00	-0.01	-0.01	0.02	-0.01	295	0.13
	4	0.02	-0.01	0.01	-0.01	-0.07	0.04	-0.01	243	0.13
Δ Total Assets	1	0.11**	0.10	0.10**	-0.08***	0.86***	0.01	0.02	442	0.34
	2	0.09**	0.10	0.15**	-0.08*	1.19***	0.37***	0.03	373	0.47
	3	0.16***	-0.05	0.11	-0.09*	1.39***	0.40***	0.05	318	0.48
	4	0.14***	-0.14	0.14**	-0.11*	1.20***	0.51***	0.04	263	0.57
Σ CAPEX	1	0.01	0.02	0.01	-0.01	0.05	0.05***	-0.00	441	0.25
	2	0.02	0.04	0.03	-0.02	0.14	0.09***	0.01	372	0.31
	3	0.03	0.09	0.05	-0.01	0.23	0.13***	0.01	317	0.42
	4	0.03	0.10	0.06	-0.00	0.34	0.18***	0.00	262	0.44
Σ R&D	1	0.00	-0.06**	0.05*	-0.01	0.04	-0.02	-0.01	136	0.48
	2	0.02	-0.11	0.12*	-0.07***	0.12	0.04	-0.01	103	0.43
	3	0.04	-0.00	0.13	-0.10***	0.14	0.08	0.01	84	0.43
	4	0.09	-0.20	0.06	-0.17***	-0.05	0.06	0.00	70	0.28
Σ Acquisition	1	-0.04	-0.02	-0.00	-0.00	0.49*	0.02	0.01	354	0.18
	2	-0.01	0.05	-0.02	0.02	0.87***	0.11**	-0.02	290	0.30
	3	0.01	0.02	0.00	-0.00	0.98***	0.14***	-0.02	241	0.32
	4	-0.03	0.03	-0.01	0.01	0.99***	0.20***	0.01	188	0.42
Σ LTRD	1	-0.03	-0.10	0.00	-0.01	0.01	0.02	-0.01	365	0.02
	2	0.03	0.10	0.07	0.01	0.04	0.06	-0.03	303	0.09
	3	0.07*	0.06	0.05	0.01	0.00	0.10*	-0.03	257	0.08
	4	0.05	0.13	-0.01	0.02	0.13	0.10	0.02	204	0.15

Datastream definitions of variables used: Cash represents money available for use in the normal operations of the company. It is the most liquid of all of the company's assets. Inventory represent tangible items or merchandise net of advances and obsolescence acquired for either (1) resale directly or (2) included in the production of finished goods manufactured for sale in the normal course of operation. Total Assets represent the sum of total current assets, long term receivables, investment in unconsolidated subsidiaries, other investments, net property plant and equipment and other assets. Capital expenditures (CAPEX) represent the funds used to acquire fixed assets other than those associated with acquisitions. R&D represents all direct and indirect costs related to the creation and development of new processes, techniques, applications and products with commercial possibilities. Acquisitions represent assets acquired through pooling of interests or mergers. It does not include capital expenditures of acquired companies. Reduction in long term debt (LTRD) represents funds used to reduce long term debt, capitalized lease obligations and includes decrease in debt from the conversion of debentures into common stock. ***, ** and * are significance levels of 1%, 5% and 10% respectively. t represents different points in time: t=1 is the year of the equity issue, t=2 is the year after the issue and t=3, t=4 are the second and third years after the equity issue. FSE, TSSE, LRVTB are the three parts of the RKRV (2005) M/B ratio decompositions and DISC. is the discounting relating to the particular deal, defined according to Hertzel and Smith (1993). Winsorised data at 1% of each tail of the distribution are used in this Table. Standard errors are adjusted for year and firm-level clustering.

Table 2D (2.6) – Pre- and post-crisis use of proceeds for PPs

		PRE-CRISIS				POST-CRISIS (margin)					
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
		FSE	TSSE	LRVTB	DISC.	FSE	TSSE	LRVTB	DISC.	N	Adj.R^2
Y	t	β 1	β 2	β 3							
Δ Cash	1	0.06***	0.08***	-0.01	-0.00	-0.02	-0.02	-0.01	0.03*	1,978	0.16
	2	0.04**	0.00	-0.01	0.01	-0.02	-0.02	-0.01	0.03	1,732	0.26
	3	0.01	-0.16	-0.02	-0.01	0.00	0.06	-0.01	0.04	1,495	0.30
	4	0.01	-0.22*	-0.08	-0.02	-0.03	0.04	0.10	0.02	1,171	0.31
Δ INV.	1	0.02**	0.02	-0.00	0.00	-0.02**	-0.01	0.01	-0.01	2,028	0.09
	2	0.05**	0.04	-0.01	0.01	-0.04*	-0.02	0.01	-0.01	1,760	0.17
	3	0.06**	0.07**	-0.01	0.01	-0.06**	-0.05*	0.01	-0.02	1,517	0.19
	4	0.07**	0.06	-0.02	0.01	-0.06**	-0.05	0.01	-0.01	1,183	0.21
Δ TA	1	0.15***	0.14	-0.02	-0.02	-0.03	-0.00	0.07	-0.02	2,060	0.29
	2	0.19***	0.14	-0.00	-0.01	-0.08	-0.02	0.13	-0.03	1,790	0.48
	3	0.23***	0.10	0.01	-0.04	-0.12**	0.01	0.13*	-0.08	1,545	0.51
	4	0.23***	0.09	0.01	-0.05	-0.18**	-0.10	0.13	-0.06	1,201	0.57
Σ CAPEX	1	0.01	0.01	-0.01	-0.00	0.01	-0.01	0.00	-0.01	2,008	0.16
	2	0.02**	0.04	-0.00	0.00	0.02	-0.05	-0.01	-0.01	1,712	0.26
	3	0.03*	0.09	-0.01	0.01	0.03	-0.10	0.01	-0.01	1,453	0.34
	4	0.04*	0.17*	-0.03	0.01	0.01	-0.18*	0.03	0.00	1,126	0.39
Σ R&D	1	-0.02***	-0.07***	0.04***	0.00	0.04***	0.09***	0.02	-0.02	528	0.32
	2	-0.03	-0.22**	0.05	0.01	0.06	0.25**	0.03	0.00	408	0.34
	3	-0.03	-0.22*	0.09	0.02	0.08	0.18	0.04	0.06	320	0.40
	4	-0.04	-0.24	0.06	-0.01	0.08	0.22	0.10	0.10*	249	0.38
Σ ACQ	1	-0.03	-0.01	0.02	-0.01	0.03	-0.01	-0.02	-0.00	1,674	0.13
	2	-0.04	0.08	0.01	0.01	0.03	-0.14	-0.01	-0.03	1,423	0.20
	3	-0.06	0.09	-0.07	0.03	0.02	-0.09	0.02	-0.07	1,194	0.23
	4	-0.10**	0.10	-0.19***	-0.03	0.06	-0.20	0.14*	-0.00	892	0.25
Σ LTRD	1	-0.04	0.00	-0.05*	-0.01	0.03	-0.09	0.06	-0.03	1,674	0.04
	2	-0.11**	-0.04	-0.08*	-0.04	0.09	-0.11	0.06	-0.03	1,384	0.05
	3	-0.10	-0.05	-0.15**	-0.05	0.06	-0.09	0.15*	-0.07	1,159	0.09
	4	-0.14*	0.02	-0.24***	-0.09**	0.12	-0.19	0.25***	-0.01	884	0.13

Datastream definitions of variables used: Cash represents money available for use in the normal operations of the company. It is the most liquid of all of the company's assets. Inventory represent tangible items or merchandise net of advances and obsolescence acquired for either (1) resale directly or (2) included in the production of finished goods manufactured for sale in the normal course of operation. Total Assets represent the sum of total current assets, long term receivables, investment in unconsolidated subsidiaries, other investments, net property plant and equipment and other assets. Capital expenditures (CAPEX) represent the funds used to acquire fixed assets other than those associated with acquisitions. R&D represents all direct and indirect costs related to the creation and development of new processes, techniques, applications and products with commercial possibilities. Acquisitions represent assets acquired through pooling of interests or mergers. It does not include capital expenditures of acquired companies. Reduction in long term debt (LTRD) represents funds used to reduce long term debt, capitalized lease obligations and includes decrease in debt from the conversion of debentures into common stock. For our analysis we consider 1994-2007 as pre-crisis and 2008-2014 as post-crisis periods. ***, ** and * are significance levels of 1%, 5% and 10% respectively. t represents different points in time: t=1 is the year of the equity issue, t=2 is the year after the issue and t=3, t=4 are the second and third years after the equity issue. FSE, TSSE, LRVTB are the three parts of the RKRV (2005) M/B ratio decompositions and DISC. is the discounting relating to the particular deal, defined according to Hertzel and Smith (1993). Winsorised data at 1% of each tail of the distribution are used in this Table. Standard errors are adjusted for year and firm-level clustering.

Table 2D (2C.1)– Pre- and post-crisis use of proceeds for PPs

		PRE-CRISIS						POST-CRISIS					
		FSE	TSSE	LRVTB	DISC.	N	Adj.R^2	FSE	TSSE	LRVTB	DISC.	N	Adj.R^2
Y	t	β 1	β 2	β 3									
Δ Cash	1	0.06***	0.07***	-0.01	-0.00	734	0.15	0.04***	0.06**	-0.01	0.03*	1,244	0.16
	2	0.04**	-0.00	-0.00	0.01	612	0.21	0.02	-0.02	-0.03	0.04*	1,120	0.30
	3	0.01	-0.16	-0.00	-0.01	529	0.31	0.01	-0.09*	-0.03	0.03	966	0.30
	4	0.01	-0.25**	-0.05	-0.02	454	0.34	-0.03**	-0.17*	0.01	0.01	717	0.33
Δ INV.	1	0.02**	0.02	0.00	0.00	764	0.07	0.00	0.01**	-0.00	-0.00***	1,264	0.04
	2	0.05**	0.04	-0.00	0.01	625	0.15	0.01*	0.02**	-0.01*	-0.00	1,135	0.05
	3	0.06**	0.06**	-0.01	0.01	535	0.18	0.01	0.02	-0.01	-0.01**	982	0.04
	4	0.07**	0.05	-0.02	0.01	457	0.17	0.01	0.01	-0.02	-0.00	726	0.11
Δ TA	1	0.15***	0.14	-0.01	-0.01	779	0.28	0.12***	0.14	0.05	-0.04	1,281	0.26
	2	0.19***	0.13	-0.01	-0.02	639	0.52	0.11**	0.11	0.13*	-0.04	1,151	0.43
	3	0.23***	0.09	-0.01	-0.03	549	0.54	0.10***	0.09	0.15**	-0.11**	996	0.48
	4	0.23***	0.08	0.02	-0.05	465	0.60	0.03	-0.03	0.15*	-0.10**	736	0.54
Σ CAPEX	1	0.01	0.01	-0.01	-0.00	779	0.13	0.02***	-0.00	-0.00	-0.01	1,229	0.14
	2	0.02**	0.04	0.00	0.00	639	0.25	0.04***	-0.02	-0.01	-0.01*	1,073	0.21
	3	0.03	0.10*	-0.01	0.00	549	0.32	0.06***	-0.01	0.00	-0.01	904	0.30
	4	0.04	0.17*	-0.04	0.01	465	0.39	0.05***	-0.01	-0.01	0.02	661	0.34
Σ R&D	1	-0.02***	-0.06**	0.04***	0.00	203	0.42	0.02	0.01	0.06***	-0.01	325	0.30
	2	-0.04	-0.19*	0.09***	0.01	145	0.37	0.03	0.02	0.08***	0.02	263	0.34
	3	-0.04	-0.14	0.10**	0.01	119	0.41	0.05	-0.05	0.12**	0.09**	201	0.40
	4	-0.04	-0.10	0.06	-0.02	94	0.32	0.04	-0.07	0.16*	0.10*	155	0.42

TABLE 2C.1 – Continued

Σ ACQ	1	-0.02	-0.01	0.01	-0.02	567	0.10	0.00	-0.02	-0.00	-0.02	1,107	0.06
	2	-0.03	0.07	-0.00	0.01	439	0.19	-0.01	-0.06*	-0.01	-0.02	984	0.12
	3	-0.06	0.09	-0.07	0.03	371	0.19	-0.03	-0.00	-0.05*	-0.04	823	0.18
	4	-0.10**	0.11	-0.19**	-0.04	295	0.20	-0.04	-0.13	-0.06*	-0.04	597	0.22
Σ LTRD	1	-0.04	0.00	-0.06**	-0.01	580	0.04	-0.01	-0.08***	-0.00	-0.04**	1,094	0.03
	2	-0.11*	-0.06	-0.07*	-0.04	460	0.07	-0.03*	-0.15***	-0.03	-0.07	924	0.03
	3	-0.10	-0.08	-0.15**	-0.05	393	0.12	-0.04	-0.13**	-0.01	-0.12	766	0.06
	4	-0.14	0.01	-0.20*	-0.09*	327	0.17	-0.03	-0.17	0.00	-0.10	557	0.04

Datastream definitions of variables used: Cash represents money available for use in the normal operations of the company. It is the most liquid of all of the company's assets. Inventory represent tangible items or merchandise net of advances and obsolescence acquired for either (1) resale directly or (2) included in the production of finished goods manufactured for sale in the normal course of operation. Total Assets represent the sum of total current assets, long term receivables, investment in unconsolidated subsidiaries, other investments, net property plant and equipment and other assets. Capital expenditures (CAPEX) represent the funds used to acquire fixed assets other than those associated with acquisitions. R&D represents all direct and indirect costs related to the creation and development of new processes, techniques, applications and products with commercial possibilities. Acquisitions represent assets acquired through pooling of interests or mergers. It does not include capital expenditures of acquired companies. Reduction in long term debt (LTRD) represents funds used to reduce long term debt, capitalized lease obligations and includes decrease in debt from the conversion of debentures into common stock. For our analysis we consider 1994-2007 as pre-crisis and 2008-2014 as post-crisis periods. ***, ** and * are significance levels of 1%, 5% and 10% respectively. t represents different points in time: t=1 is the year of the equity issue, t=2 is the year after the issue and t=3, t=4 are the second and third years after the equity issue. FSE, TSSE, LRVTB are the three parts of the RKRV (2005) M/B ratio decompositions and DISC. is the discounting relating to the particular deal, defined according to Hertzel and Smith (1993). Winsorised data at 1% of each tail of the distribution are used in this Table. Standard errors are adjusted for year and firm-level clustering.

Table 2D (2.7) – Choice of the equity issuance mechanism (margins)

PANEL A: determinants of issuance choice by market			
	Full sample	AIM	MM
FSE	-0.019**	-0.010	-0.053
TSSE	0.002	0.010	-0.036
LRVTB	-0.032***	-0.025**	-0.066
DISC.	-0.007	0.005	-0.041
Rel. Leverage	-0.034***	-0.025***	-0.054
Size	-0.036***	-0.022***	-0.102***
Age	0.006	0.001	0.017
Market	0.156***	-	-
General Corp.	-0.029*	-0.018	-0.074
Investment Purpose	-0.115***	-0.066***	-0.321***
Debt reduction	0.074	-	0.017

PANEL B: determinants of issuance choice by size				
	1st quartile	2nd quartile	3rd quartile	4th quartile
FSE	-0.015**	0.000	-0.026	-0.049
TSSE	-0.015	0.051	0.096*	-0.165
LRVTB	-0.011	-0.061***	-0.013	-0.005
DISC.	-0.006	0.002	-0.011	-0.022
Rel. Leverage	-0.023**	-0.047***	-0.009	-0.039
Size	-	-	-	-
Age	0.007	0.007	-0.011	0.021
Market	0.055***	0.081***	0.183***	0.603***
General Corp.	-0.011	-0.045*	-0.028	-0.028
Investment Purpose	-0.047**	-0.063**	-0.182***	-0.174**
Debt reduction	-	-	0.125	-0.056

Table 2.7 reports the results (margins) from logistic model on the equity issuing mechanism choice. Winsorised data at 1% of each tail of the distribution are used in this Table. The dependent variable is 1 if the company uses a Private Placement and 0 otherwise. FSE, TSSE and LRVTB are the three RKRV components of M/B ratio (firm-specific error, sector-specific error and growth prospects respectively.) DISC. is the discounting relating to the particular deal, defined according to Hertzel and Smith (1993). Rel. Leverage is the ratio of the firm's leverage at the point of the deal over the average long-term leverage of the industry the firm belongs to. Size is the natural logarithm of the book value of total assets of the company, adjusted for inflation and Age is the natural logarithm of age of the company at the point of the equity issuance. Market is a dummy that equals 1 is the firm is listed on AIM and 0 if listed on London's main market (MM). General Corporate, Investment Purpose and Debt reduction are dummy variables capturing different intended uses of proceeds of the equity funds.

Table 2D (2C.2) Choice of the equity issuance mechanism

PANEL A: model of choice by market			
	Entire sample	AIM	MM
FSE	-0.154**	-0.143	-0.151
TSSE	0.020	0.148	-0.103
LRVTB	-0.258**	-0.368**	-0.190
DISC.	-0.056	0.066	-0.118
Rel. Leverage	-0.278***	-0.328***	-0.156
Size	-0.294***	-0.322***	-0.293***
Age	0.048	0.016	0.048
Market	1.263***	-	-
General Corp.	-0.231*	-0.262	-0.211
Investment Purp.	-0.935***	-0.965***	-0.920***
Debt reduction	0.596	-	0.049
Constant	2.578***	4.142***	2.364***
N	2,836	1,853	937
Pseudo-R^2	0.177	0.047	0.060

PANEL B: model of choice by size				
	1st quartile	2nd quartile	3rd quartile	4th quartile
FSE	-0.350**	0.008	-0.163	-0.160
TSSE	-0.360	0.654	0.608*	-0.544
LRVTB	-0.260	-0.771***	-0.081	-0.016
DISC.	-0.138	0.021	-0.070	-0.073
Rel. Leverage	-0.530**	-0.595***	-0.060	-0.127
Size	-	-	-	-
Age	0.154	0.083	-0.068	0.069
Market	1.276***	1.026***	1.159***	1.983***
General Corp.	-0.266	-0.566*	-0.174	-0.092
Investment Purp.	-1.105**	-0.806**	-1.149***	-0.572**
Debt reduction	-	-	0.788	-0.185
Constant	2.636***	3.104***	1.439***	0.481
N	684	690	710	713
Pseudo-R^2	0.067	0.111	0.095	0.110

Table 2C.2 reports the results from logistic model on the equity issuing mechanism choice. Winsorised data at 1% of each tail of the distribution are used in this Table. The dependent variable is 1 if the company uses a Private Placement and 0 otherwise. FSE, TSSE and LRVTB are the three RKRV components of MTB ratio (firm-specific error, sector-specific error and growth prospects respectively.) DISC. is the discounting relating to the particular deal, defined according to Hertzel and Smith (1993). Rel. Leverage is the ratio of the firm's leverage at the point of the deal over the average long-term leverage of the industry the firm belongs to. Size is the natural logarithm of the book value of total assets of the company, adjusted for inflation and Age is the natural logarithm of age of the company at the point of the equity issuance. Market is a dummy that equals 1 is the firm is listed on AIM and 0 if listed on London's main market (MM). General Corporate, Investment Purpose and Debt reduction are dummy variables capturing different intended uses of proceeds of the equity funds.

Table 2D (2.8) – (In) dependence of uses of proceeds

VARIABLES	(1) Cash	(2) Inventory	(3) Total Assets	(4) CAPEX	(5) LTDR	(6) R&D	(7) ACQ
Cash		-0.022	-0.240	-0.041	-0.034	0.063	0.094
Inventory	0.211		0.181	-0.009	-0.363*	0.188	-0.233
Total Assets	-0.036	0.027*		0.021	-0.004	0.007	-0.010
CAPEX	-0.474**	-0.086	0.188		0.154	-0.002	-0.110
LTDR	0.180	-0.073**	0.209	-0.051		-0.010	0.070
R&D	-0.054	0.010	-0.184*	0.004	-0.036		0.053
ACQ	-0.209**	0.004	-0.299*	0.026	0.325***	0.047	
FSE	-0.100	-0.014	-0.125	0.035*	-0.039	0.003	0.034
TSSE	-0.324	0.025	-0.860***	0.013	0.177	-0.262***	-0.062
LRVTB	0.062	-0.088***	0.258*	-0.018	-0.027	0.007	-0.109*
DISC	0.136*	-0.009	0.029	0.005	0.027	-0.000	-0.064
PRIM CAP	1.919***	0.166	3.468***	0.244*	0.005	0.408**	0.288
OTHER CAP	0.218***	0.022**	0.476***	0.023*	0.019	0.023	0.014
TA (0)	-0.056	-0.017	-0.0846	-0.009	-0.010	-0.013	-0.043
$Cash_{t-1}$	2.001***						
$Inventory_{t-1}$		2.238***					
$Total\ Asset_{t-1}$			2.692***				
$CAPEX_{t-1}$				6.109***			
$LTDR_{t-1}$					5.906***		
$R\&D_{t-1}$						6.579***	
ACQ_{t-1}							3.649***
N	218	218	218	218	218	218	218
Adj. R^2	0.530	0.633	0.768	0.797	0.822	0.936	0.843

Table 2.8 presents results from a system of seven simultaneous equations related to the seven uses of proceeds raised in equity deals in our sample. The seven uses of proceeds are: Cash, Inventory, Total Assets, Capital expenditures (CAPEX), reduction in long-term debt (LTDR), research and development (R&D) and acquisitions (ACQ). FSE, TSSE and LRVTB are the three RKRV components of M/B ratio (firm-specific error, sector-specific error and growth prospects respectively.) DISC. is the discounting relating to the particular deal, defined according to Hertzel and Smith (1993). PRIM CAP is related to the capital the company raise from the equity market, OTHER CAP are other sources of internally generated funds, TA (0) is the total assets at the year-end before the equity issue. Winsorised data at 1% of each tail of the distribution are used in this Table.

Table 2D (2C.3)– Endogeneity in uses of proceeds

VARIABLES	(1) Cash	(2) Inventory	(3) Total Assets	(4) CAPEX	(5) LTDR	(6) R&D	(7) ACQ
Cash		-0.015	-0.209	-0.015	-0.013	0.076*	0.094
Inventory	0.092		0.240	0.064	-0.268	0.218	-0.317
Total Assets	-0.015	0.007		0.012	-0.024	0.011	-0.001
CAPEX	-0.589**	-0.021	0.304		0.213	0.043	-0.131
LTDR	0.227	-0.095**	0.142	-0.076**		-0.035	0.042
R&D	-0.061	-0.006	-0.205**	-0.008	-0.036		0.041
ACQ	-0.267	0.046	-0.255	0.113***	0.453***	0.082	
FSE	-0.108	-0.026	-0.179*	0.042**	-0.074*	-0.013	0.050
TSSE	-0.388	0.005	-1.009***	-0.032	0.100	-0.267***	0.009
LRVTB	-0.006	-0.094***	0.083	-0.010	-0.039	0.007	-0.158**
DISC	0.207**	0.002	0.137	0.000	0.000	-0.006	-0.008
PRIM CAP	2.183***	0.281*	3.359***	0.163	-0.056	0.185	0.313
OTHER CAP	0.251***	0.034**	0.549***	0.020	0.025	0.025	0.004
TA (0)	-0.024	0.003	-0.106	-0.004	-0.012	-0.023	-0.059
$Cash_{t-1}$	2.073***						
$Inventory_{t-1}$		2.213***					
$Total\ Asset_{t-1}$			2.647***				
$CAPEX_{t-1}$				5.836***			
$LTDR_{t-1}$					5.777***		
$R\&D_{t-1}$						6.593***	
ACQ_{t-1}							3.739***
N	170	170	170	170	170	170	170
Adj. R^2	0.573	0.646	0.806	0.800	0.835	0.940	0.832

Table 2C.3 presents results from a system of seven simultaneous equations related to the seven uses of proceeds raised in equity deals in our sample. The seven uses of proceeds are: Cash, Inventory, Total Assets, Capital expenditures (CAPEX), reduction in long-term debt (LTDR), research and development (R&D) and acquisitions (ACQ). FSE, TSSE and LRVTB are the three RKRV components of M/B ratio (firm-specific error, sector-specific error and growth prospects respectively.) DISC. is the discounting relating to the particular deal, defined according to Hertzel and Smith (1993). PRIM CAP is related to the capital the company raise from the equity market, OTHER CAP are other sources of internally generated funds, TA (0) is the Total assets at the year before the equity issue. Winsorised data at 1% of each tail of the distribution are used in this Table.

Chapter 3. Short-term and Long-term market performance of SEOs

3.1 Introduction

It is widely accepted that small and medium enterprises (SMEs) in the United Kingdom tend to rely mainly on internal funds and partly on bank lending channels rather than market equity channels for their external financing needs (Brav 2009; Cosh, Cumming and Hughes 2009). They have been confronted with a funding gap in the wake of the 2007-08 financial crisis that restricted this channel. The UK banking crisis commenced with the run on Northern Rock deposits in September 2007 and deteriorated with the Lehman Brothers collapse in September 2008. The crisis had a direct effect on bank lending to SMEs. The Basel Committee on Banking Supervision published the first version of Basel III in late 2009, giving banks three years to satisfy tighter prudential capital requirements and new leverage ratios. Banks responded in two ways: they, firstly, increased margins over base rate for lending to reflect increased risks and secondly, attempted to shrink the loan portfolios on their balance sheets to meet the increased capital requirements. The cumulative effect was that bank lending to SMEs fell and the interest rate cost of loans rose. We document a marked shift in the external financing landscape for SMEs over the past decade and this has been described as the SME funding gap.

In the light of the important friction associated with the financing of SMEs in the UK, the chapter makes two contributions. The first is that, employing a sample of 2,793 seasoned equity offering (SEOs) over 1994-2014, new light is shed on the role of

external equity financing in mitigating the funding gap that SMEs have historically experienced in the UK. We argue that the equity markets have played a leading role in the funding of SMEs and highlight the role of the Alternative Investment Market (AIM).[47] While the conventional thinking in the literature suggests SMEs have relied mainly on bank lending channels for their external financing needs and SEOs have been the remit of large companies, our findings suggest that the AIM equity channel was in fact prominent in smoothing out the financing frictions in the bank lending channels. The vast majority of the post-2007 SEOs have involved SMEs that listed on AIM not the Main Market. Furthermore, we show that listed SMEs accounted for 66% of all Secondary Equity Offerings (SEO) over the course of our sample period and for 82% of AIM SEOs.

Our second contribution is that we argue that PPs offer a solution to the potential information asymmetry and moral hazard issues associated with SEOs on AIM.[48] We have several reasons. The degree of information asymmetry is likely higher for investors in AIM than the Main Market as the AIM, is a platform enabling young small firms with new technologies to raise finance. This raises the question: why do investors choose to buy stocks of firms listed on lightly regulated exchanges such as AIM.

Our first rationale is that institutional investors have the wherewithal to conduct due diligence on SMEs prior to investing in their PPs but this is not the case with retail

47 Although AIM was established as recently as 1995, it is a Recognised Investment Exchange under the Financial Services and Markets Act 2000 that created the Financial Services Authority (FSA) as a regulator. It has enjoyed a meteoric rise to dominance in London where it accounts for 70% of al SEOs over the sample period. AIM distinguishes itself from London's traditional Main Market and indeed from other international markets by its minimal list requirements and by its light touch regulatory approach. The latter approach to regulation has enjoyed a long tradition within the City of London as witnessed by the rise of the euro-banking markets in the 1970s.

48 The majority (85%) of SEOs have taken the form of private placements (PPs) where tranches of new shares are placed with financial institutions and other sophisticated investors. Traditionally, most UK SEOs had taken the format of open offers or rights offers. SMEs account for 82% of the PPs on AIM and this is dominated by micro enterprises (1-9 employees) and small firms (10-49 employees).

investors. The second is the valuation of AIM firms and SMEs in particular is seen as suffering from major information asymmetry problems. One important aspect relates to disentangling the growth prospects of such firms and their potential misvaluation. SMEs are rightly thought to pose challenges to valuation even though they can offer potentially high long run growth prospects. Prior research on SEOs has not effectively disentangled the two, since a suitable valuation approach had not been available. In this light, we employ the valuation approach of Rhodes-Kropf et al. (2005) to disentangle estimates of long-run growth prospects from possible misvaluation effects. Our results indicate that AIM SMEs that place their equity privately with financial institutions on average enjoy high growth prospects. Finally, since our findings show that SMEs offer their shares at a discount to their market price by leaving money on the table, we argue that the underpricing seeks to compensate investors for the adverse selection costs they bear. Moreover, since the market price of SMEs engaging in PPs is below their fundamental value (estimated from the valuation approach noted above), it will be a further incentive for sophisticated investors since they obtain a double discount when they invest in such placements. Taken together, we argue that the choice of PPs as an issuing device resolves adverse selection problems faced by SMEs on AIM.

Furthermore, we evaluate the short term and long term market response to the SEOs focusing particularly on PPs. We find that the short term response to PPs is positive and significant while long run abnormal returns are insignificant. The same results hold for SMEs as well for PPs by SMEs. Our short run results are consistent with prior studies while we find contrasting results for the long run abnormal returns.

The rest of the chapter is organised as follows. Section two discusses the prior literature

and develops hypotheses and Section three describes our methodology. Section 4 describes the sample of SEOs and PPs by SMEs and discusses our empirical findings while a final section (Section 5) concludes.

3.2 Background and hypotheses development

3.2.1 London Alternative Investment Market (AIM) and SMEs

Since its establishment in 1995, London's AIM has flourished and particularly so in the last decade. Its success hinges on its low cost and relatively straightforward listing and follow-on requirements for both SMEs and growth companies in need of equity financing. Throughout the years it has become a popular secondary market and is the listing choice even for firms from outside the UK. The regulatory requirements to join AIM are considerably lighter compared to the London Main Market (MM), and the associated costs lower. AIM is regulated by the Exchange and all the companies seeking listing in AIM must follow the Rules for AIM companies set by London Stock Exchange as well as any relevant national law and European Union (EU) Directives (Market Abuse Regulation, Disclosure and Transparency Rules and Prospectus Rules by Financial Conduct Authority).[49] This lighter touch regulatory approach of AIM has created a controversy among researchers and market regulators. Some like Nielsson (2013) view AIM as being an appropriate platform for SMEs while others consider AIM "like a casino" since many new AIM listings have gone bankrupt within a year.[50]

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49 London Stock Exchange, "AIM Rules for Companies".

50 SEC official R. Campos during a Conference in London mentioned "That feels like a casino to me". The reason behind this comment is the failure rate of companies listed on AIM is quite high. In reply, John Wallace, LSE Director of media relations, said that the failure rate of companies on AIM was about the same to that of the main market. (BBC News)

However, despite the criticism, AIM continues to grow rapidly and to attract companies not only from the UK but also from other countries. After the enactment of Sarbanes-Oxley Act, many US firms have sought listing on AIM and this has changed the stream of flotations globally. According to a recent report from Grant Thornton, the expansion of AIM listings was rapid from 2000 to 2007.[51] During the financial crisis there was a decrease in the number of new listings but since 2011 a positive growth trend has been observed. Furthermore, according to the same report, AIM companies contributed significantly to an increase in UK GDP and improvement in employment figures.

Why firms from around the globe are seeking listing on AIM? Higher costs and heavier regulatory requirements associated with listing on the Main Market (MM) seem plausible reasons explaining the choice of AIM firms. However, Doukas and Hoque (2016) find that, in reality, the choice of the listing platform is a self-selection decision the companies make taking into consideration their financing and growth agendas. The MM and AIM attract firms with different characteristics and investment plans for the post-IPO period, with AIM companies getting involved more in SEOs and MM firms in acquisitions, capital changes and dividend announcements. Another reason for companies choosing AIM is the lower listing and on-going costs. Thus, Doukas and Hoque (2016) conclude that these reasons and not the MM heavier regulatory requirements seem to determine the listing decisions the firms make.

To apply for an AIM listing, a firm must find and employ a nominated advisor (NOMAD). London Stock Exchange sets the criteria to become a NOMAD and imposes sanctions in cases of NOMADs failing to perform their duties. The NOMAD helps the company

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51 Economic impact of AIM, Grant Thornton 2015.

throughout the listing process and provides advice on the regulations with which the firm should comply. In cases where a firm is not willing to follow specific regulatory provisions for listing in AIM, under the "comply or explain" regime the NOMAD is the one who provides the Exchange with all the necessary information regarding the reasons for non-compliance. This key role of NOMADs and the fact that they are hired by those companies seeking an AIM listing clearly creates some conflict of interest. Although high quality small firms with good growth prospects may seek listing on AIM, poor quality firms may also compete for listings on AIM to be able to raise financing more easily. However Nielsson (2013) finds evidence against the latter hypothesis.

An important question that arises for investors willing to invest on AIM firms is related to the performance of these firms. Previous studies examine the delisting rates of firms on AIM as well as the performance of these companies. Gerakos et al. (2013) study the post-IPO performance of AIM firms and compare it with that of similar firms listed on other exchanges, namely the LSE Main Market, NASDAQ, OTCBB as well as US Pink Sheets. They find that companies listed on AIM substantially underperform their peers in the aftermath of their listing. This underperformance is correlated with increases in accruals which indicate potential earnings manipulation. Moreover, underperformance is larger for firms where retail investor ownership is higher. Their results suggest that limited oversight on AIM may fail to sufficiently protect unsophisticated investors who run the risk of buying stocks at inflated prices. In his discussion of Gerakos et al. (2013) study, Piotroski (2013) discusses the potential advantages and disadvantages of private regulation. Given the different perspectives on which AIM and traditional exchanges differ (it is not merely a difference between public versus private sector oversight) he discusses the limitations in Gerakos et al. (2013) study to attribute the post-IPO AIM

underperformance to weak investors' protection or ineffective private sector regulation.

Although there is a lot of controversy about AIM, its efficiency as a "light-touch" exchange regulated platform and the quality of firms it is attracting, its regulatory flexibility and low cost requirements seem to be a solution for SMEs searching to get listed, but cannot afford to approach the primary main market. AIM as a potential listing avenue for SMEs can play an important role for these firms, especially given the issue of SME funding gap (see for example: Luo et al. (2016), Oakey (2003), Oakey (2007), North et al. (2010)).

The SME funding gap refers to difficulties SMEs experience given that their options in raising external finance are limited compared to larger companies. Traditionally in the UK, SMEs have been reliant for external finance on their local retail bank to supply their working capital and investment requirements, in excess of internally generated funds. The SME funding gap in the UK was exacerbated in the wake of the 2008 financial crisis when several large banks experienced financial difficulties and had to be rescued by the government. In the following years, banks were subject to more stringent prudential requirements including the tougher capital requirements introduced under Basel III. The upshot was twofold. On the one hand, banks were either unable or unwilling to lend to SMEs in the post-crisis years. And when they lent, they charged a higher margin over base rate. On the other hand, the general economic climate and banks' own financial difficulties induced a discouraged borrower effect under which SMEs were not inclined to apply for bank loans. Thus SMEs have had to seek alternative funding sources.

Typically, UK SMEs have tended to rely on external debt (Brav 2009; Cosh et al. 2009) and not seek external equity financing. Two developments have changed that. One is

equity crowdfunding where early stage SMEs can seek to raise funds via an internet platform such as Crowdcube or Syndicate Room.[52] The other is the growth of AIM whose light listing and regulatory requirements are attractive to SMEs. As mentioned before, one of the additional advantages of being listed on AIM is that SMEs wishing to engage in SEOs face very low charges and listing requirements. Thus one of the side effects of the runaway success of AIM has been to transform the external financing landscape for SMEs so that the AIM dominates the SEO market in London.

Nielsson (2013) finds that AIM-listed foreign firms in London are of similar quality level to foreign firms listed in the US and in Continental Europe. The principal difference is that AIM firms are typically smaller in terms of market capitalisation. The question then is whether this holds for UK firms listed on AIM. The above discussion leads us to our first hypothesis.

One major concern behind the ongoing debate about AIM and its light touch regulatory framework is whether AIM as a platform is appropriate to ensure the soundness of financial markets and the safety of investors which are the primary objectives for regulators. An immediate question stemming out of that is what type of investors might be interested in buying shares in the SMEs engaging in SEOs on AIM. This question is relevant given the well-documented finding that firms issue equity when they are overvalued in order to take advantage of windows of opportunity and raise money in the market cheaply. Being listed on AIM can be perceived by some investors as a good signal for the company, assuming that the firm is a young, innovative firm with high growth prospects. It could be construed as a bad signal if the company is listed on AIM

52 See Vismara (2016) for study of equity crowd funding.

because it could not make it onto the MM. This may increase the uncertainty of investors related to the quality of the equity issuer. Given also the rise of Private placements (PPs) of equity in the UK (see also previous chapter) the question raised is why institutional investors would be willing to invest in SMEs listed on AIM, since the risk involved is quite high given the size and growth level of the SMEs.

One plausible reason for institutional involvement in AIM SMEs is the prospect of being able to identify and invest in high growth and innovative young firms. However, it is recognised that only a small fraction of SMEs can go on to achieve high growth. In other words, the probability of picking winners in this context is rather low. One of the key insights of prospect theory formulated in Kahneman and Tversky (1979) and Tversky and Kahneman (1992)[53] is that investors tend to overweight low probability events. This idea has been developed by Barberis and Huang (2008) and Barberis et al. (2016) and Wang et al. (2018) to include lottery-like stocks. These are stocks with right-skewed returns. In this respect, shares in AIM SMEs can be viewed as lottery-like stocks. Thus, we conjecture that SMEs listed on AIM are firms having particularly high expected growth prospects making them lottery-like investments. In addition to that, the extant literature provides evidence that firms issue equity when they are overvalued in order to achieve better terms and raise more funds. If this is the case, is it also applicable to equity-issuing SMEs on AIM? If institutional investors are the main players in buying the equity raised by AIM firms, then they surely would be disinclined to buy overvalued new SME shares. As we discussed in the previous chapter, especially in the case of PPs, a factor of paramount importance is underpricing. High level of underpricing offered by

[53] The cumulative prospect theory in the latter generalizes the prospect theory (PT) concept of the earlier book. Researchers in finance now employ PT to encompass both.

issuing firm can attract institutional investors to buy the equity of the issuing firm. The question arising here is which are the particular characteristics of AIM SMEs in terms of growth prospects, misvaluation and underpricing in order for these firms to be able to raise equity financing, privately and publicly. The above discussion suggests the following hypotheses.

H1: AIM listed SMEs engaging in PPs enjoy higher long run growth prospects than SMEs on the MM.

H2: AIM listed SMEs engaging in PPs are more undervalued relative to their fundamentals than SMEs on the MM.

H3: AIM listed SMEs placing their equity privately (PPs) are more underpriced than those SMEs listed on the MM and issuing equity privately. [54]

3.2.2 Market reaction in SEO announcements

Stock markets react differently to announcements of various corporate events, depending on whether investors perceive these events as a positive or negative signal for the quality of the firms involved. Prior literature has shown that firms raising capital through SEOs underperform substantively during the post-deal period. Loughran and Ritter (1995) and Spiess and Affleck-Graves (1995), examining SEO deals occurring in the US during the 1970's and 1980's, find evidence of long-run underperformance on the companies involved in this type of deals. They attribute this finding to windows of opportunity that managers exploit by issuing equity when the company's stock is overvalued. Persistent underperformance over a period of 5 years after the

[54] Sometimes, underpriced firms can be referred, in the literature, as firms "leaving money on the table".

announcement of the deal, may indicate that the signal of SEOs is not fully revealing and markets appear slow to adjust to new information. Similarly, Hansen and Crutchley (1990) report negative stock price reactions around the announcement of the equity issue and link this underperformance with subsequent decreases in issuing companies earnings (earnings downturn argument), but the sample used in their analysis is quite limited (109 common stock offerings). In the same direction, Loughran and Ritter (1997) link the underperformance of issuing companies with the poor operating performance in the aftermath of the SEO deal. Interestingly, Jung et al (1996) find that market reaction for firms issuing equity depends on how they use the funds raised. Although they find negative abnormal returns around the announcement day for firms issuing equity, they provide evidence that firms raising capital to finance valuable investment opportunities do not experience adverse market reactions when they issue equity, while firms issuing to finance their capital expenditures receive the most negative market reactions. Using more recent data covering the period 1973-2001 and a sample of 4,291 SEO deals, DeAngelo et al (2010) report that issuers tend to experience high abnormal stock returns over the 36- and 12-month period prior to the announcement of the deal and low abnormal returns over the subsequent 36-month period.

Evidence of performance changes in the post-SEO period is also reported for UK issuers based on different samples and time frames. Marsh (1979), using a sample of 254 UK equity issues, finds that firms outperform the market during the year following the equity issue, but in the second year, after the offering, abnormal returns decrease significantly and in some cases become even negative, depending on the benchmark model used for calculating the abnormal returns. Levis (1995) investigates the

performance of UK companies conducting rights issues during the period 1980-1988 and find statistically significant wealth loss of shareholders of the issuing firms in the 18 months following the announcement of the deal. Ngatuni et al (2007), using slightly more recent data compared to Levis (1995), also report negative abnormal returns for companies conducting rights issues in the UK. A total number of 818 rights issues covering the period 1986-1995 is used in this study and results show that issuing firms underperform their match peers for a period of 5 years. Evidence reported in Ngatuni et al (2007) strongly support long-run underperformance for UK issuers, but results have not been tested for robustness over alternative model specifications. Along similar lines, Andrikopoulos (2009) also report negative post-SEO performance of the issuing companies using a sample of 1,512 rights issues occurred in 1988-1998. He attributes this result to an overall deterioration in operating fundamentals of the companies involved in this type of deals in the period following the announcement of the SEO deal. Interestingly enough, Dissanaike et al (2014), examining a relatively recent sample of data (2003-2012), find positive announcement returns during the financial crisis period and especially in 2009 where the number of equity issues was particularly high. This finding contradicts prior literature reporting negative market reactions to the announcement of equity offerings and is attributed to the macroeconomic conditions and high level of uncertainty during the period examined. During the financial crisis markets may perceive equity issues as good news since a successful issuance could save a company from insolvency.

As already discussed in chapter 2, a special type of SEOs is Private Placements (PPs), which are equity issuances offered to sophisticated investors (e.g. investment banks, fund managers etc). In contrast to SEOs, the announcement of PPs is treated as good

news by the market. Two potential explanations for the positive market reaction to PPs are monitoring (Wruck (1989)), and certification (Hertzel and Smith (1993)). According to the monitoring hypothesis, investors who purchase equity placed privately are able to effectively monitor the management of the issuing company and ensure that resources are efficiently used, while according to the certification hypothesis, the equity issued through PPs is bought by sophisticated, well informed and experienced investors who are able to perform adequate due diligence and thus their decision to buy equity of a specific firm is perceived by the market as an indicator that the particular firm is correctly valued (less likely to have an overvalued firm trying to take advantage of a window of opportunity).[55]

A positive market reaction, as reflected in positive average abnormal returns (AARs) to the announcement of PPs, is reported in several studies. Wruck (1989), using US data, find a positive announcement AAR of 4.5% for PP deals. Hertzel and Smith (1993) examine a sample of smaller US companies conducting PPs (106 placements) and find CAR of 1.7% around the announcement day. While Wruck (1989) finds evidence supporting the monitoring and ownership hypotheses, implying that market reaction on the announcement of an SEO deal could be a result of anticipated changes in the performance of the company's managers, Hertzel and Smith (1993) mostly attribute their results to the information asymmetry hypothesis according to which the changes in the issuing firm value around the announcement of the deal could be caused by market assessment of the company's assets and investment opportunities. Although abnormal performance around the announcement of the deal is found positive, the long-

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[55] Barclay M. J., Holderness C. G., Sheehan D. P., 2007, Private placements and managerial entrenchment, Journal of Corporate Finance 13, 461 – 484

run stock price performance of firms engaging in PPs is negative. Hertzel et al (2002) using a sample of 619 firms issuing equity through private placings between 1980 and 1996 find that the positive returns observed in the period around the announcement of the deal are followed by poor post-SEO stock price performance. Chakraborty and Gantchev (2013) using a sample of US private investments in public equity (PIPEs) covering the period 1995-2007 explore an alternative channel through which the positive market reaction to the announcement of this type of deals could be explained. They provide evidence that issuing equity privately improves the coordination between shareholders and has a positive effect in the negotiations of the issuer with its debt-holders and reduce the likelihood of default.

Slovin et al (2000) report qualitatively similar results to the aforementioned studies for the UK. Using a sample of 76 PP deals covering the period 1986-1994, they find two-day abnormal returns of 3.3%. They also note that the introduction of private placements as an option to raise equity in the UK in 1986, deteriorated the adverse selection problem already existed in equity issues through right issues and shifted the market of seasoned equity offering from a pooling equilibrium to a separating equilibrium. Dionysiou (2015) examines both the short- and long-term market reaction to the announcement of PPs in the UK using a sample covering the period 1998-2008 and finds that, although abnormal returns are positive around the announcement of the equity issue, they become negative during the 3-year period in the aftermath of the deal. Companies engaging in this type of deals are found to have high earnings quality and growth opportunities and thus market may over-react on the announcement of the transaction expecting more than it is actually realised and thus in the long-run it reacts negatively.

Prior literature reports several explanations behind market reactions to equity issuances. Some studies attribute underperformance and negative abnormal returns related to public equity issues to windows of opportunity that managers exploit by issuing equity when the company's stock is overvalued. Persistent underperformance over a period of up to 5 years after the announcement of the deal may indicate that the signal of SEOs does not fully reveal market reaction in a short-term period after the announcement, meaning that stock markets appear slow to adjust to new information. Information asymmetry and agency costs can also explain the market reaction to this type of corporate event. The magnitude of information asymmetry between public and private equity issues may explain why markets react differently in the announcement of the two types of equity issues. The level of information asymmetry when equity is issued privately with institutional investors is likely to be lower compared to equity issues to the general public, since institutional investors have the knowledge and expertise to conduct better due diligence compared to retail investors. In some cases, equity issuers disclose more information privately to institutional investors as opposed to public information disclosure through a prospectus that could potentially imply a danger of potential loss of competitive advantage. In other words, institutional investors buying equity privately from firms have better access to information about the issuing company compared to the average retail investor in the market of public equity issues.

Given evidence from prior literature on post-SEOs and post-PPs performance of firms we explore the following hypotheses for our sample:

H4: SMEs issuing equity underperform both in the short- and long-run.

H5: SMEs placing their equity privately have positive short-run performance and

negative long-run performance.

Given that there are SMEs listed on both AIM and MM (maybe on the MM to a lesser extent), we expect markets to perceive AIM SMEs as more risky than MM SMEs. Since there is a higher risk involved in investing in AIM SMEs shares, we expect a higher return in the short-run. This leads as to our next hypothesis:

H6: SMEs listed on AIM out-perform those listed on the MM in the short-run.

3.3 Methodology

3.3.1 Underpricing, growth prospects and misvaluation

3.3.1.1 SEOs and underpricing

There are several approaches prior studies employ to quantify underpricing. In previous chapter (chapter 2) we discussed in detail about underpricing and the approach used by Hertzel and Smith (1993). In this chapter we use an alternative approach, which focuses on the comparison between offer price and price on the issue date. We employ the method developed by Altinkilic and Hansen (2003). The advantage of this approach is that it allows decomposition of underpricing into two components: discounting and offer-day-return. The first component of underpricing captures the expected or predictable discounting while the second one the unexpected or surprise part of underpricing (i.e. the market reaction on the offer day).

According to Altinkilic and Hansen (2003), the terms underpricing, discounting an offer-day-return are defined as follows:

$$\text{Underpricing (U)} = \log \frac{p_1}{p_0} \quad (3.1)$$

$$\text{Discounting (D)} = \log \frac{p_{-1}}{p_0} \quad (3.2)$$

$$\text{Offer-day-return (R)} = \log \frac{p_1}{p_{-1}} \quad (3.3)$$

Where p_1 is the closing price on the day of the offer, p_0 is the offer price and $p_{-1.s}$ the closing price on the previous day of the offer. Given the above definitions it is clear that:

$$U = D + R \quad (3.4)$$

We obtain the offer price data for each deal from Thomson One, while data on the closing price on the day of the offer and the previous day are from Datastream.

3.3.1.2 Equity issuers' growth prospects and misvaluation

In exploring the motivation of investors to buy equity raised by UK firms (AIM and MM listed), and in particular by SMEs listed on AIM, we examine equity issuing firms' growth prospects. In addition, we test the overvaluation hypothesis of new equity funding, which asserts that firms raising new equity – whether via IPOs of SEOs – take advantage of windows of opportunity when their shares are overvalued relative to fundamentals to raise external equity cheaply. High growth prospects and misvaluation

of equity issuing firms on AIM could explain why investors are interested in buying securities of these firms. This question becomes even more interesting when we consider institutional investors buying equity by AIM (SMEs) firms via Private Placements. Having enough knowledge, experience and resources to conduct appropriate due diligence, compared to the average retail investor, institutional investors are unlikely to buy overvalued securities from companies with low growth prospects. To quantify equity issuers' growth prospects and misvaluation we use a variation of the Rhodes-Kropf et al. (hereafter RKRV) (2005) methodology that suggests a decomposition of the market-to-book (M/B) ratio into long run growth and misvaluation components. This methodology is explained in detail in the previous chapter. In this chapter we employ a simplified version RKRV (2005) methodology approached as follows:

Letting the fundamental value of a company be V, then:

$$M/B = M/V \times V/B \tag{3.5}$$

The first term represents misvaluation as the difference between market price and fundamental values based on long run industry accounting multiples. Note that if there is no misvaluation, then M=V and M/B simply captures growth prospects.

Following RKRV (2005), the decomposition of the logarithm of M/B can be specified as:

$$m_{it} - b_{it} = m_{it} - v(\theta_{it};\alpha_j) + v(\theta_{it};\alpha_j) - b_{it} \tag{3.6}$$

where lower case letters denote logarithms of variables. The first component [m_{it} – v ($\theta_{it};\alpha_j$)] is defined as misvaluation and calculated as the difference between market value and the long term fundamental value conditional on sector (j) average multiples over a 5-year moving window. The second component [v ($\theta_{it};\alpha_j$) - b_{it}] captures the difference between long-run value and the book value. This is an indicator of the long run growth prospects of a firm. RKRV (2005) employ three separate models to provide estimates of short run fundamental value at time *t* and we employ their model 3, like in the previous chapter.

3.3.2 Short- and long-run performance of equity issuers

3.3.2.1 Measuring short-run performance: Cumulative Abnormal Returns (CARs)

To estimate the daily abnormal returns of our sample of firms, we use a standard market model approach (see for example Brown and Warner 1985). To implement the standard market model approach there are several steps to be followed. First, we regress (using OLS regression) daily returns of a firm on the daily returns of a suitable market index in the estimation-period window. The coefficients estimated from the OLS regressions are employed to estimate the expected returns for the event-period window. The abnormal returns are the difference between the actual return (R_{it}) and the estimated return $E(R_{it})$ from the model:

$$AR_{it} = R_{it} - E(R_{it}) \sim N(0, \sigma_i^2) \qquad (3.7)$$

where $E(R_{it}) = \hat{\alpha}_i + \hat{\beta}_i(R_{mt})$

R_{it} is daily stock return of event (i.e. deal) *i*, on date *t*, R_{mt} is the return on the specific market index *m* at time *t*. The market index employed here is FTSE ALL. Also, $\hat{\alpha}_i$ and $\hat{\beta}_i$ are the estimated coefficients from a period prior to the event (estimation-window). We consider as day zero (event date) the equity issue date. We identify this information from Thomson ONE. When we refer to days (before or after the event date), we mean trading days. The issue dates from Thomson ONE for all the equity deals in the sample, are checked to ensure they fall on trading days. Where they do fall on non-trading days, we adjust the issue date so that it falls on the closest following trading day.

The estimation window employed is [-240, -61] days and from this window the parameters of the market model are estimated. We require at least 120 observations per event to be present in the estimation period, for the parameters to be estimated. Average Abnormal Return (AR) are computed on a daily basis in the event period as:

$$\overline{AR}_t = \frac{1}{N}\sum_{i=1}^{N} \widetilde{AR}_{it} \qquad (3.8)$$

N is the number of deals in our sample. Test statistics are computed for the daily average abnormal returns. [56] Average Cumulative Abnormal Return (CAR) for a given

[56] We calculate test-statistics for the average daily abnormal return but do not report them. The Standardised Abnormal Return (SAR) for an event i, on day *t*, is:

$$SAR_{it} = \frac{AR_{it}}{\sigma_i} \sim N(0,1)$$

where, σ_i is the standard deviation of the abnormal returns of event *i*, estimated from day -240 to

window of length L in the event period is:

$$\overline{CAR}^L = \frac{1}{N}\sum_{i=1}^{N} \widetilde{CAR}_i^L \tag{3.9}$$

where, $\widetilde{CAR}_i^L = \sum_{t=1}^{L} \widetilde{AR}_{it}$

We also compute test-statistics for the average CARs.[57] The Cumulative Standardised Abnormal Return (CSAR) for an event i, for a window of length L, is:

$$CSAR_i^L = \sum_{t=1}^{L} SAR_i^L \sim N(0, L) \tag{3.10}$$

$$\overline{CSAR}^L = \frac{1}{N}\sum_{i=1}^{N} \frac{CSAR_i^L}{\sqrt{L}} \sim N\left(0, \frac{1}{N}\right) \tag{3.11}$$

$$t_{CAR} = \sqrt{N}\left(\overline{CSAR}^L\right) \sim N(0,1) \tag{3.12}$$

We further adjust the t_{CAR} for cross-sectional correlations among sample firms in

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day -61. The average Standardised Abnormal Return is:

$$\overline{SAR}_t = \frac{1}{N}\sum_{i=1}^{N} SAR_{it} \sim N\left(0, \frac{1}{N}\right)$$

and the test statistic is:

$$t_{AR} = \sqrt{N}\left(\overline{SAR}_t\right) \sim N(0,1)$$

[57] Since there are cross-sectional differences in the level of response to an SEO announcement, this produces an increase in the variance of the abnormal returns. We then further amend the standard errors according to the adjustment suggested by Harrington and Shrider (2007).

the estimation period. We follow Kolari and Pynnonen (2010), who extend the statistic suggested by Boehmer, Bruscemi and Poulsen (1994) (BMP) to control for cross-correlations among sample firms. The BMP statistic adjusts for the cross-sectional correlations among sample firms during the event period. We procced as follows:

$$t_{BMP} = \frac{SAR_{it}\sqrt{N}}{\sqrt{s^2}} \tag{3.13}$$

where $s^2$is the cross-sectional variance of the SAR_{it} on the issue date. This is one adjustments, among others, to account for event induced increase in variance in the event period, proposed by Harrington and Shrider (2007).[58]

Following, Kolari and Pynnonen (2010) we then adjust t_{BMP} for cross-correlation in the returns among the sample firms during the event period by computing the average cross-correlations from the estimation period, as follows:

$$t_{BMP,Adjusted} = t_{BMP}\sqrt{\frac{1-\bar{r}}{1+(N-1)\bar{r}}} \qquad \bar{\rho}_{i,j} = \frac{1}{\left(\frac{N^2-N)}{2}\right)}\sum_{i=1}^{N}\sum_{j<i}^{N}\rho_{i,j} \tag{3.14}$$

We assume that the average cross-correlations computed from the estimation period are constant and, in particular, remain unchanged from the estimation period to the event period. The test statistics reported in the tables are the $t_{BMP,Adjusted}$ values computed from Eq. 3.14.

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58 While several studies have applied the BMP adjustment for event induced heteroscedasticity in the abnormal returns during the event period, none have developed the theoretical rationale for this potential increase. Bohmer et al. (1994), for example, refer to event induced variance but do not explain the context in which such event related heteroscedasticity can occur. Several studies have employed the adjustment for event induced heteroscedasticity prior to BMP, mainly in the accounting literature (see, Collins and Dent, 1984; Sefcik and Thompson, 1986; Karafiath, 1994; Morse, 1984 and Dyckman, Philbrick, and Stephan, 1984) in US studies while there have been some attempts to apply the same adjustment elsewhere. For example, Cummins and Weiss (2004) incidentally apply the adjustment while focusing on merger events among firms in the European insurance industry.

3.3.2.2 Measuring long-run performance: Buy-Hold Abnormal Returns (BHARs)

We employ the measurement and testing approach of Andrade et al. (2000) to evaluate long term stock market reactions, which accounts for cross-correlations among the returns of the sample firms. The focus is on Buy and Hold Abnormal Returns (BHAR), computed as:

$$BHAR_i = \prod_{t=1}^{T}(1 + R_{i,t}) - \prod_{t=1}^{T}(1 + R_{m,t}) \quad (3.15)$$

Where the $R_{i,t}$ and $R_{m,t}$ are daily returns of event (i.e. deal) i and the market respectively, on day t and T is the appropriate holding horizon. We employ 3 holding horizons: 1 year, 2 years and 3 years.

We compute the cross-sectional mean buy and hold abnormal return $\overline{BHAR}$ which is the equally weighted average of the individual $BHAR_i$:

$$\overline{BHAR} = \sum_{i=1}^{N} BHAR_i \quad (3.16)$$

where N is the number of events in the cross-section. The typical testing frameworks employed in studies of long term stock market performance are seriously biased where they have assumed the returns of events have zero cross-correlations. The essence of such studies is that they employ a simplistic measure of portfolio standard deviation

that assumes the off-diagonal terms in the variance-covariance matrix are zero. While such an approach is perhaps justified in studies where the firms/events under study are randomly sampled from the population, in events such as SEOs, where the firms have made a clear choice to raise money as compared to those not raising finance, the sample is clearly not random. Furthermore, corporate events such as SEOs, as well others such as IPOs and M&As tend to cluster in time. Since, hot and cold time periods of corporate events have been recorded by prior studies as well as a clustering by sector, it is very unlikely that the cross-correlation between the returns of such firms is zero, as likely has been assumed in most prior studies. Following Andrade et al. (2000) who demonstrate that failing to adjust for the cross-correlations leads to large under estimates of the true standard error of the BHAR and consequently to over rejection of the null hypothesis of no abnormal returns, we compute the entire variance-covariance matrix, and estimate the portfolio standard deviation accounting for all correlations, and hence all the off-diagonal terms.[59] While we find that the average correlations $\bar{\rho}_{i,j}$ are around 0.007, which is clearly small, the covariance terms dominate as the sample size N increases, as can be seen from the portfolio standard deviation formula:

$$\sigma_{BHAR} = \sqrt{\frac{1}{N^2}\sum_i^N \sigma_i^2 + \frac{1}{N^2}\sum_{i=1}^N \sum_{j,j\neq i}^N \rho_{i,j}\sigma_i \ \ \sigma_j} \qquad (3.17)$$

Simulation results reported in Andrade et al. (2000), show that the factor of bias, B can be approximated as follows:

[59] While one of the approaches employed in prior studies to address the problem of correlation is to employ a bootstrap to estimate the portfolio standard deviation, this is not suitable since a bootstrap assumes independence and ignores the cross-correlations.

$$\sigma_{BHAR}^{INDEP}[B] = \sigma_{BHAR}^{DEP} \tag{3.18}$$

$$\text{where } B \approx \sqrt{1 + (N-1)\bar{\rho}_{i,j}}; \qquad \bar{\rho}_{i,j} = \frac{1}{\left(\frac{N^2-N)}{2}\right)} \sum_{i=1}^{N} \sum_{j<i}^{N} \rho_{i,j} \tag{3.19}$$

For example, we find that the portfolio standard deviation assuming independence is 0.036 while with dependence it nearly triples to 0.108. That is, we find the factor of bias is nearly 3. Contrary to some references in the literature on long term underperformance that larger sample sizes mitigate the problem of cross correlation by averaging out the bias from cross-correlation, it is clear that larger sample sizes only exacerbate the problem, not alleviate it. We generally report long term performance results employing an estimate of the correlations prevailing in the five years prior to the SEO issue date. However, for comparison purposes we also report, in early tables, the BHAR results assuming independence and hence replicate the results of prior studies on long term-underperformance following SEOs, which find that there is significant long term underperformance.

3.4 Data and empirical analysis

3.4.1 Sample

The sample consists of UK equity issuing firms. The way the data is collected as well as the criteria applied to filter the data is the same as in the previous chapter. The only difference here is that we drop the first year of data (1994) because part of our analysis

involves comparison between London AIM and MM and AIM was established in 1995. After applying these criteria and matching the sample with available Datastream data[60], we keep the observations for which growth, misvaluation and underpricing components are available. This leads to a sample of 2,793 deals. Figure 3.1 shows the patterns in the number of SEO deals on AIM and the main market (MM) both for PPs and Other deals over the sample period.[61]

Figure 3.1– SEOs by market and type

Figure 3.1A– Number of Private Placements (PPs) on AIM (solid line) and the Main market (MM) (dotted line)

Figure 3.1A indicates that PPs on MM are more prevalent – albeit in low numbers – than those on AIM in the 1990s. Thereafter, from 2000, the PP deals on AIM exceed those on

60 SEDOL numbers as well as manual matching, where needed, are used.

61 Other deals comprise rights issues (RIs) and open offers (OOs).

MM and their dominance increases from 2006 onwards.

Figure 3.1B – Number of other deals (i.e. rights issues and open offers) on AIM (solid line) and the Main market (MM) (dotted line)

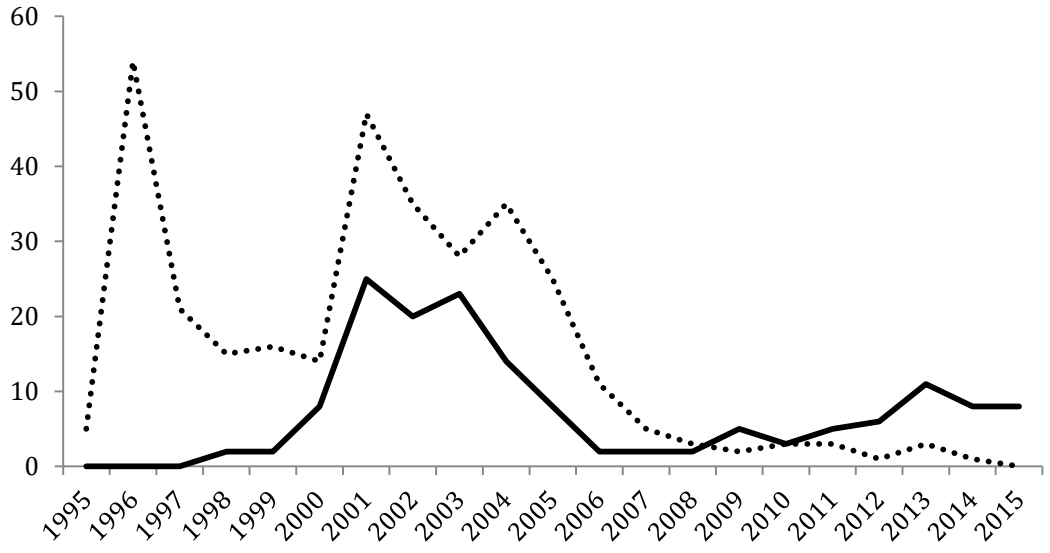

Figure 3.1B shows that numbers of Other deals on both markets has remained low over the sample period, both exhibit a downward trend since 2001 and are virtually negligible in magnitude since 2007. The numbers of Other deals (Rights Issues and Open Offers) on AIM exceed those on the MM after 2008. Before 2008 the amount of Rights Issues and Open Offers deals is larger on MM compared to AIM.

Figure 3.1 raises the question whether equity issuers on AIM (using either PPs or Other deals) manage to raise more money compared to issuers on the main market. In other words, does the pattern observed, especially after 2008, in terms of the number of equity issue deals hold also for the actual funds raised? The answer to this question is given in Figure 3.2.

Figure 3.2 – Amount of proceeds by market

Figure 3.2A – Amount of proceeds raised (in millions £) in UK SEOs on the Main Market (dotted line) and AIM (solid line)

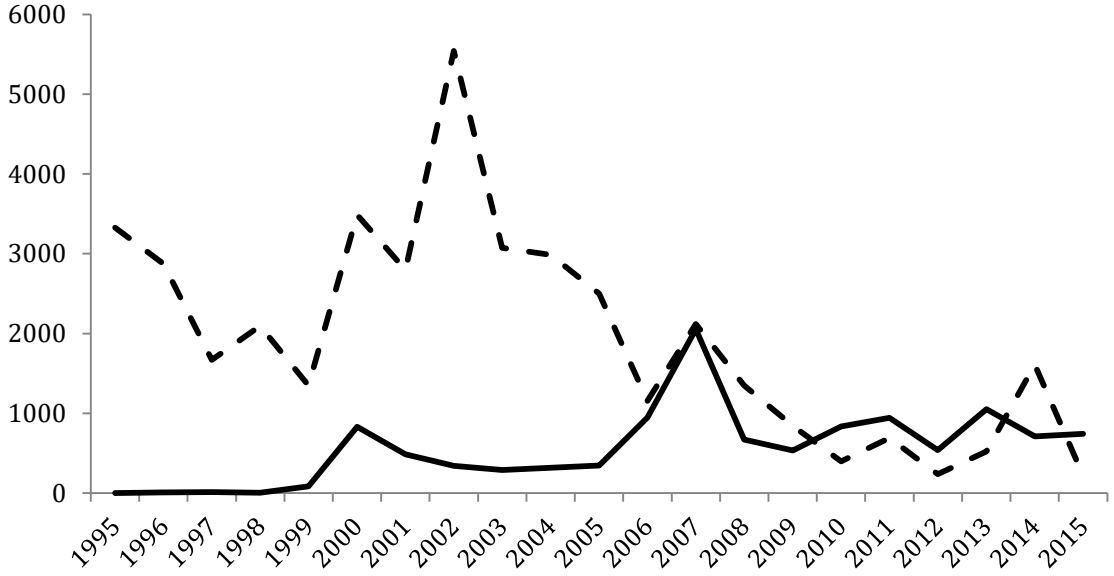

Figure 3.2B – Amount of proceeds raised (in millions £) in the Main Market (dotted line) and AIM (solid line) through PPs

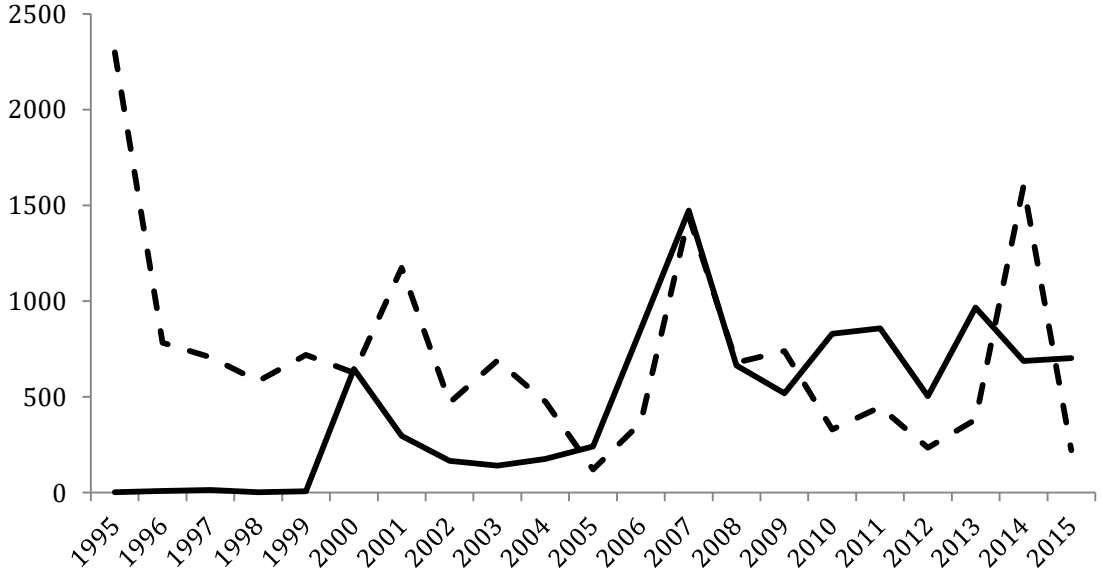

Figure 3.2A shows the amount of funds raised in UK equity issues during the 1995-2015 period in the MM (dotted line) and AIM (solid line). Up to 2009 the amounts raised by MM equity issuers is significantly higher than those by AIM issuers. However, this pattern is reversed during 2010-2013 when AIM dominates the MM albeit by relatively small margins. In 2014, the amount of equity proceeds raised in MM is higher than AIM, while in 2015 AIM proceeds exceed the amount raised in MM. The picture is similar in Figure 3.2B where the amounts of proceeds (in £m) raised through PPs are presented. From 1995 to 2004 the amount of money raised in the MM is clearly higher than AIM. However, during 2005-2007, 2010-2013 and 2015 proceeds raised on AIM are higher than MM. This is quite a formidable achievement when the recently formed growth market overtakes the long established main market in terms of total proceeds.[62] This has happened without any fanfare and this is the reason for referring to it as the quiet revolution.

Table 3.1 shows the total number of SEO deals, the split between PPs and Other deals, between SMEs and large firms and details of AIM and MM deals by type of SEO and by size of SME. In splitting SMEs into groups we use the European Union definition for differently sized SMEs. The factors taken into consideration in determining whether a firm is a micro, small or medium SME are the number of employees and either turnover or total balance sheet value. More specifically, micro SME firms have staff headcount of less than 10 employees and either turnover below (or equal) to € 2m or balance sheet total below (or equal) to € 2m. Small SMEs are considered firms with less than 50 employees and either a turnover below (or equal) € 10m or total balance sheet value

[62] Further information on the number of equity deals on AIM and MM as well as equity proceeds can be found in Tables 1 and 2.

below (or equal) to € 10m. Finally, medium-sized SMEs have less than 250 employees and either a turnover below (or equal) to € 50m or value of total assets below (or equal) to € 43m. In our study, we determine whether a firm is an SME (and in what particular SME group the firm belongs to, i.e. micro, small or medium-size) at the point of the equity issue. This practically means that we collect information about the employees, turnover and total assets for firms at the point the raise money through SEOs. Firms raising equity financing, publicly and/or privately, may use the funds for investments and grow larger in time. What we want to focus here though is whether a firm is an SME or not at the point of the equity raising. Yearly figures for Euro/GBP rates are used to convert turnover and total asset values in euros and apply the definition of the European Union.

Panel A of Table 3.1 shows the total number SEOs on AIM and MM. The overwhelming majority (83%) of deals involve PPs rather than other deals. SMEs predominate on both markets: they account for 66% of total deals and 72% of PPs. Panel B shows that of the 1,761 AIM PP deals, 82% are by SMEs compared to 18% (323) that are by large firms. PPs predominate on AIM with a 92% share of total AIM deals (1915). However, it seems that PPs are also attractive to large firms on AIM, with a total of 323 PP deals as compared with 317 deals on MM in Panel D. Panel C shows the distribution of SMEs across different categories of small firms on AIM. Small enterprises have the highest number of PP deals (527) on AIM and this total is close to the total number of PPs (551) on MM. Micro firms completed 408 PPs on AIM and medium firms 503 deals. In addition, public SEOs deals (Other) are mostly preferred by SMEs (43 and 49 deals respectively).

Table 3.1 - SEO deals

PANEL A: AIM and MM	Total Deals	SME	Large firms
Total SEOs	2,793	1,851 (66%)	942 (34%)
PPs	2,312 (83%)*	1,672 (72%)	640 (28%)
Other	481 (17%)*	179 (37%)	302 (63%)
PANEL B: AIM deals	Total Deals	SME	Large firms
PPs	1,761 (92%)*	1,438 (82%)	323 (18%)
Others	154 (8%) *	105 (68%)	49 (32%)
PANEL C: AIM SME deals	Micro	Small	Medium
PPs	408 (28%)	527 (37%)	503 (35%)
Others	13 (12%)	43 (41%)	49 (47%)
PANEL D: MM Deals	Total Deals	SME	Large
PPs	551 (63%)*	234 (43%)	317 (57%)
Others	327 (37%)*	74 (23%)	253 (77%)
PANEL E: MM SME deals	Micro	Small	Medium
PPs	34 (14%)	67 (29%)	133 (57%)
Others	1 (1%)	14(19%)	59 (80%)

Table 3.1 shows the number of SEO deals in the UK during 1995-2015. Panel A provides information about the total number of deals on Alternative Investment Market (AIM) and the main market (MM) as well as the split between private placements (PPs) versus Other deals (Rights Issues and Open Offers)and SMEs versus larger firms. Panel B reports the same information as Panel A but focuses only on AIM, while Panel C has the number of PPs and Other deals of SME issuers listed on AIM and the split between differently sized SMEs (micro, small and medium). The distinction among micro, small and medium-sized SMEs is based on the European Union definition for SMEs. Panel D provides information about the total number of deals on the main market (MM) as well as the split between private placements (PPs) versus Other deals (Rights Issues and Open Offers) and SMEs versus larger firms. Panel E has the number of PPs and Other deals of SME issuers listed on MM and the split between differently sized SMEs (micro, small and medium). *Refers to share of relevant column total. All other percentages refer to share of relevant row total.

Panels D and E provide the same information as Panels B and C but for the main market. Some 878 SEO deals were completed on MM, 551 (63%) of which are PPs. Panel D indicates that large firms account for 57% of PPs and SMEs for a not inconsiderable 43%. For large firms public SEO deals (Other) dominate with a 77% share. Panel E gives the breakdown of SEO deals on MM by SME size. Medium size firms account for 57% of MM PPs and 80% of MM public SEO deals (Other).

Table 3.2 shows the total amount of proceeds and the mean and median values across different types of deals.

The total amount of equity proceeds raised (£52.6 bn) is almost equally split between PPs and Other deals. However, although the number of PPs is by far larger than the sum of Other deals (see Table 3.1), the average amount of money raised via PPs is almost one sixth of the latter. In total, SME issuers raise £9.5bn via SEOs or around one sixth of the total. SMEs raise more funds via PPs (£7.6bn through PPs versus £1.9bn through Other deals) while larger firms do so via Other deals (£25.9bn through Other deals versus £17.2bn through PPs). Total PP proceeds for SMEs (£7.6bn) are small relative to that of large firms (£17.2bn). A similar pattern is also observed in terms of average amounts of money raised, with SME companies raising on average £4.6mil through PPs and large firms £27.0mil.

Focusing on AIM market (Panel B), equity issuers listed on AIM raise more money via PPs (£9.8bn) compared to Other deals (£2.0bn). Although the total amount of money raised through PPs on AIM is higher compared to the proceeds raised using Other deals, the average (mean) proceeds for PPs are lower (£5.5bn for PPs versus £13bn for Other deals). Both SMEs and large companies get more money from equity markets using private placements of their equity. Medium SMEs (Panel C) proceeds (£3.0bn) are bigger compared to those micro- and small-SMEs (£1.1bn and £1.8bn respectively). The amounts of proceeds coming from either Rights Issues or Open Offers are much smaller and broadly similar across the different types of SMEs.

Table 3.2- Proceeds from SEO deals

PANEL A: AIM and MM						
	All Deals		SMEs		Large firms	
	(1)	(2)	(3)	(4)	(5)	(6)
	Total Proceeds (£ bn)	Mean (Median) (£ mil)	Total Proceeds (£ bn)	Mean (Median) (£ mil)	Total Proceeds (£ bn)	Mean (Median) (£ mil)
Total SEOs	52.6	18.9 (2.8)	9.5	5.1 (1.5)	43.1	45.9 (12.0)
PPs	24.8	10.8 (2.0)	7.6	4.6 (1.3)	17.2	27.0 (7.1)
Other	27.8	57.7 (14.3)	1.9	10.5 (5.3)	25.9	85.8 (26.3)
PANEL B: AIM deals						
	All Deals		SMEs		Large firms	
	Total Proceeds (£ bn)	Mean (Median) (£ mil)	Total Proceeds (£ bn)	Mean (Median) (£ mil)	Total Proceeds (£ bn)	Mean (Median) (£ mil)
PPs	9.8	5.5 (1.5)	5.9	4.2 (1.2)	3.8	11.7 (3.6)
Other	2.0	13.0 (4.6)	0.7	7.0 (3.7)	1.3	26.0 (9.1)
PANEL C: AIM SME deals						
	Micro		Small		Medium	
	Total Proceeds (£ bn)	Mean (Median) (£ mil)	Total Proceeds (£ bn)	Mean (Median) (£ mil)	Total Proceeds (£ bn)	Mean (Median) (£ mil)
PPs	1.1	2.8 (0.6)	1.8	3.5 (1.3)	3.0	6.0 (2.1)
Other	0.1	8.6 (5.0)	0.2	4.5 (2.5)	0.4	8.8 (4.0)

Table 3.2. Proceeds from SEO deals (cont.)

PANEL D: MM Deals						
	All Deals		SMEs		Large firms	
	(1)	(2)	(3)	(4)	(5)	(6)
	Total Proceeds (£ bn)	Mean (Median) (£ mil)	Total Proceeds (£ bn)	Mean (Median) (£ mil)	Total Proceeds (£ bn)	Mean (Median) (£ mil)
PPs	15.1	27.5 (6.7)	1.6	7.1 (2.2)	13.4	42.6 (14.5)
Other	25.8	78.8 (23.9)	1.2	15.4 (9.5)	24.7	97.3 (32.6)
PANEL E: MM SME deals						
	Micro		Small		Medium	
	Total Proceeds (£ bn)	Mean (Median) (£ mil)	Total Proceeds (£ bn)	Mean (Median) (£ mil)	Total Proceeds (£ bn)	Mean (Median) (£ mil)
PPs	0.1	3.7 (1.5)	0.2	3.5 (1.0)	1.3	9.8 (3.0)
Other	0.0	2.5 (2.5)	0.2	12.5 (12.5)	1.0	16.3 (9.3)

Table 3.2 reports the amount of proceeds raised by UK equity issuers in the 1995-2015 period. Panel A provides information about the money raised both on Alternative Investment Market (AIM) and the main market (MM) and the split between private placements (PPs) versus Other deals (Rights Issues and Open Offers) and SMEs versus larger firms. Panel B reports the same information as Panel A but it focuses only on AIM, while Panel C has the amount of proceeds raised through PPs and Other deals of SME issuers listed on AIM and the split between differently sized SMEs (micro, small and medium). The distinction among micro, small and medium-sized SMEs is based on the European Union definition for SMEs. Panel D provides the same information as Panel B for the main market (MM). Panel E has the amount of proceeds raised through PPs and Other deals of SME issuers listed on MM and the split between differently sized SMEs (micro, small and medium). Columns (1), (3) and (5) report total amount of proceeds in £bn, while columns (2), (4) and (6) the mean (and in parenthesis the median) of the proceeds (in £mil) of the relevant group of deals.

The pattern observed for MM equity proceeds in Panel D is quite similar to that in Panel B. Total proceeds from PPs (£15.1bn) are lower compared to the proceeds from Other deals (£25.8bn) and the average and median values for PPs are lower also. SMEs raise marginally more proceeds by using private (£1.6bn) than by public (£1.2bn) issues of equity. Large firms raise more money in public equity issues (£24.7bn) and the average value for proceeds is also bigger in this case. Micro- and small- SMEs in the MM sample (Panel E) raise about the same amount of proceeds via PPs and public issues, while medium-SMEs raise more via PPs in total and average levels.

Summing up, the dominant role of both AIM and PPs stands out when the focus is on numbers of deals. On one hand, the 1,915 AIM deals account for 69% of all SEO deals on the London markets. On the other, PPs comprise a formidable 83% of all SEOs. Both are linked as PPs account for 92% of all SEOs on AIM. SMEs make up 66% of all deals and dominate AIM both in terms of numbers and total proceeds. By contrast, large firms account for 82% of the value of all SEO proceeds. On AIM firms raise more proceeds through PP than from Other deals. However the situation is reversed on the MM where they raise more proceeds from Other deals and where they clearly dominate proceeds in all types of SEOs.

3.4.2 Empirical analysis

3.4.2.1 Growth prospects, misvaluation and underpricing of equity issuers

AIM is an equity market facilitating the listing and raising of financing of small-sized firms with high growth prospects. Given the central role of AIM in SEOs and especially in PPs, the next step is to establish whether firms involved in AIM PPs are high growth firms. The approach adopted is a decomposition of the market-to-book ratio (M/B) into

misvaluation and growth components.

Table 3.3 presents the results of the decomposition of M/B ratios used to compute misvaluation and growth prospects using the modified RKRV approach described earlier. Panel A of the table reports results for the SME equity issuers listed on AIM and the main market (MM), Panel B focuses on medium size SMEs while Panel C gives the M/B decomposition results by firm size (micro, small and medium SMEs) for companies listed on AIM that place their equity privately with financial institutions.

Panel A of Table 3.3 shows that the mean M/B ratio (log values) for SMEs listed on AIM is lower than that of SMEs listed in MM (0.89 versus 1.06) but the difference between the two is not statistically significant. When we decompose M/B into growth and misvaluation parts we find that the two groups of SMEs (listed on AIM and MM) are different. Despite having lower M/B ratios, SME issuers listed on AIM have much higher growth prospects (1.21) than MM SMEs (1.06) and the difference is statistically significant at the 1% level. This provides strong support for H1.

If we focus on PP issuance only (Columns 4 and 5) the results are identical in their support for H1 for all SEOs and PPs alike. This is not surprising since PPs account for 92% of all AIM SEOs. SMEs issuing PPs on AIM have a long run V/B[63] ratio of 3.39 ($e^{1.22}$) that is almost one and a half times its M/B ratio of 2.44. By contrast, the V/B ratio for SMEs issuing PPs on the MM is virtually identical to its M/B ratio. These results highlight how misleading it would be to rely on the M/B ratio as a growth proxy for SMEs listed on AIM. The contrast between AIM and MM firms applies also to the misvaluation component of M/B. SME SEOs and PPs on MM are correctly valued since

[63] V/B: value-to-book ratio is the ratio of fundamental value of the firm over book value and captures the growth prospects.

Table 3.3 - M/B decomposition results for SMEs (1995-2015)

PANEL A: SMEs on AIM versus MM						
	(1)	(2)	(3)	(4)	(5)	(6)
	AIM TOTAL	MM TOTAL	t-diff	AIM PPs	MM PPs	t-diff
M/B	*2.44*	*2.89*		*2.44*	*2.72*	
M/B (logs)	0.89	1.06	-1.89	0.89	1.00	-1.01
	(25.86)	(12.70)		(25.27)	(10.58)	
GROWTH	*3.35*	*2.89*		*3.39*	*2.86*	
GROWTH (logs)	1.21	1.06	2.73	1.22	1.05	2.76
	(53.21)	(20.59)		(51.76)	(18.54)	
MISVALUATION	*0.73*	*1.00*		*0.72*	*0.94*	
MISVALUATION (logs)	-0.32	0.00	-4.89	-0.33	-0.06	-3.48
	(-11.85)	(0.00)		(-11.62)	(-0.80)	
PANEL B: Medium size SMEs on AIM versus MM						
	AIM TOTAL	MM TOTAL	t-diff	AIM PPs	MM PPs	t-diff
M/B	*2.14*	*2.83*		*2.16*	*2.69*	
M/B (logs)	0.76	1.04	-2.58	0.77	0.99	-1.73
	(13.40)	(10.83)		(13.08)	(8.60)	
GROWTH	*2.48*	*2.64*		*2.48*	*2.59*	
GROWTH (logs)	0.91	0.97	-0.91	0.91	0.95	-0.50
	(27.42)	(16.36)		(26.22)	(14.34)	
MISVALUATION	*0.86*	*1.07*		*0.87*	*1.05*	
MISVALUATION (logs)	-0.15	0.07	-2.86	-0.14	0.05	-1.98
	(-3.39)	(1.16)		(-2.93)	(0.58)	

PANEL C: PPs SMEs on AIM by size					
	(1)	(2)	(3)	(4)	(5)
	MICRO (1)	SMALL (2)	MEDIUM (3)	t-diff (1) vs (2)	t-diff (2) vs (3)
M/B	*2.66*	*2.56*	*2.16*		
M/B (logs)	0.98	0.94	0.77	0.45	2.13
	(14.25)	(16.47)	(13.08)		
GROWTH	*4.53*	*3.67*	*2.48*		
GROWTH (logs)	1.51	1.30	0.91	4.13	7.73
	(33.02)	(33.57)	(26.22)		
MISVALUATION	*0.58*	*0.71*	*0.87*		
MISVALUATION (logs)	-0.54	-0.35	-0.14	-2.95	-3.39
	(-9.68)	(-7.85)	(-2.93)		

M/B ratios are decomposed into growth and misvaluation components using Rhodes-Kropf et al. (2005) (RKRV) methodology. Panel A shows M/B decomposition results for SMEs listed on Alternative Investment Market (AIM) and the main market (MM) (total number of deals and private placements). Panel B focuses on medium size SMEs on AIM and MM, while Panel C reports M/B, Growth and Misvaluation results across different sizes of SMEs (micro, small and medium) placing equity privately. RKRV use three different models in their paper in order to decompose M/B ratios. Here, we use the third RKRV model which takes into consideration book values, net income and leverage and has the highest explanatory power compared to the other two. We modify the original RKRV approach to correct for look-ahead bias. Results are presented in logs and level values (in italics).

their corresponding M/V values (0.00 and –0.06, respectively) are insignificantly different from zero. By contrast, SME SEOs and PPs on AIM are deeply and significantly undervalued. For instance, M/V = 0.72 for SME PPs which implies that AIM SMEs are trading at a discount of one third to their long run fundamental value. This implies a strong rejection of Hypothesis 3. The difference in misvaluation between AIM and MM firms is highly significant for both SME SEOs in total and PPs alike.

Summing up, SMEs involved in SEOs, in total, and PPs, in particular, on AIM are doubly attractive to institutional investors and other sophisticated investors. On one hand they enjoy huge growth prospects of about 1.5 times their M/B ratio on average. On the other hand, they are trading at an average discount of one third to their long run fundamental value. By contrast, SMEs involved in SEOs and PPs on the MM are correctly priced on average and their M/B ratio is a good proxy for their growth prospects.

Panel B has the same information as Panel A but it focuses on medium sized SMEs listed on AIM and the MM, for a like-to-like size-wise comparison. The reason for this is that the composition of SMEs in terms of size varies by market with small and medium-enterprises and medium-sized firms predominant on AIM and the MM, respectively. Over half (62%) of the 308 SEOs by SMEs listed on the MM are by medium-sized firms while there are some 552 SEOs by medium-sized SMEs on AIM. The results show that M/B ratios for medium size SMEs on MM are significantly higher compared those for similar size SMEs listed on AIM, with the difference between the two being statistically significant. The growth prospects are higher than their M/B ratios for AIM but not MM medium-size SMEs. Moreover the difference between the two growth components of M/B ratios is not statistically significant. Medium size SMEs on AIM are undervalued

while those on the MM are slightly overvalued and their differences are statistically significant for the total sample of SEOs. However, the degree of misvaluation of AIM medium size SMEs is considerably smaller than for all AIM SMEs (Panel A). The pattern for of M/B ratios, growth and misvaluation is similar for AIM and MM medium-sized SMEs placing their equity privately (columns 4 and 5 in Panel B). The differences, however, between AIM and MM M/B components are not statistically significant.

Panel C of Table 3.3 shows the growth and misvaluation results across different sizes of AIM SMEs issuing equity privately, namely micro, small and medium size SMEs. The overall M/B ratios for micro and small firms groups of firms are around the same level (approximately 2.6). M/B ratio of medium-sized firms is lower (2.2). However, decomposing the M/B ratios reveals that micro-enterprises have the highest growth prospects and that these decline monotonically as we move to the small and medium sized SMEs (log values of 1.51 versus 1.30 and 0.91, respectively). SMEs across different sizes differ also in terms of misvaluation. Although firms in all groups clearly undervalued, the degree of undervaluation is highest in micro-enterprises (-0.54), followed by small and medium firms (-0.35 and -0.14, respectively).

Mispricing is defined as the difference between the price on the issue date and the offer price.[64] The difference between closing price on the issue date and offer price over the closing price on the issue date is used here to capture mispricing as a proportion of the share price on the day of the equity issue. Given this definition, a positive result would be interpreted as underpricing since it implies that the offer price is lower that the closing share price on the issue day. Table 3.4 reports results of underpricing and its

[64] See also Altinkilic and Hansen (2003).

components according to Altinkilic and Hansen (2003) methodology for various subgroups of our sample. Panel A has results of firms placing equity privately versus firms using Rights Issues or Open Offers, while Panel B of SME companies listed on AIM and MM. Panel C shows the underpricing findings for PP issuing firms of small size (SMEs) versus large-size ones listed on AIM and MM. Finally, Panel D has results for SMEs placing equity with financial institutions across different firm sizes.

Columns 1 and 2 of Panel A show that, on average, underpricing is significantly larger in cases of PPs (0.76) compared to Rights Issues and Open Offers (0.53). The offer-day return component appears negligible and the numbers are almost entirely driven by discounting. When we restrict the sample to SMEs using PPs versus SMEs making use of RIs and OOs, we see that the average results for underpricing do not differ significantly. SMEs using PPs have a average underpricing figure of about 0.86 while SMEs issuing equity via RIs and OOs 0.84. Again, the results are driven by discounting since offer-day return numbers are close to zero.

Panel B has results for SME firms listed in different London markets. Both SME equity issuers listed on AIM and MM are underpriced, which is consistent with the prior literature. Columns 1 and 2 of Panel B have the results of underpricing decomposition for SMEs listed on AIM versus SMEs listed on London MM, issuing equity privately. Columns 4 and 5 have the same results as 1 and 2 but for companies issuing equity through RIs and OOs. The main finding is that, although AIM listed firms appear to have bigger underpricing, driven primarily from discounting, the differences between AIM and MM firms are not statistically significant. From the findings in Panel B, and also the

Table 3.4 - Mispricing results for SMEs (1995-2015)

PANEL A: Private Placements (PPs) versus Other deals						
	(1)	(2)	(3)	(4)	(5)	(6)
	TOTAL PPs	TOTAL Other	t-diff	SMEs PPs	SMEs Other	t-diff
Underpricing	0.76	0.53	2.97	0.86	0.84	0.19
	(20.30)	(7.89)		(19.00)	(6.03)	
Discounting	0.76	0.54	2.94	0.88	0.85	0.18
	(20.49)	(7.93)		(19.26)	(6.05)	
Offer-day return	-0.01	-0.01	0.08	-0.01	-0.01	0.09
	(-3.36)	(-1.82)		(-4.21)	(-1.61)	
PANEL B: SMEs and differences in markets						
	SMEs PPs AIM	SMEs PPs MM	t-diff	SMEs Other AIM	SMEs Other MM	t-diff
Underpricing	0.88	0.75	1.03	0.95	0.67	0.98
	(18.10)	(5.95)		(5.50)	(2.94)	
Discounting	0.90	0.75	1.11	0.97	0.68	0.99
	(18.37)	(5.99)		(5.52)	(2.95)	
Offer-day return	-0.01	0.00	-1.40	-0.02	-0.01	-0.32
	(-4.29)	(-0.48)		(-1.29)	(-0.96)	
PANEL C: PPs from SMEs versus large firms on AIM and MM						
	SMEs PPs AIM	Large PPs AIM	t-diff	SMEs PPs MM	Large PPs MM	t-diff
Underpricing	0.88	0.74	1.28	0.75	0.20	3.94
	(18.10)	(6.99)		(5.95)	(3.42)	
Discounting	0.90	0.74	1.40	0.75	0.19	4.02
	(18.37)	(6.97)		(5.99)	(3.31)	
Offer-day return	-0.01	0.00	-2.22	0.00	0.01	-1.28
	(-4.29)	(0.05)		(-0.48)	(1.58)	
PANEL D: PPs SMEs on AIM by size						
	(1)	(2)	(3)	(4)		(5)
	MICRO (1)	SMALL (2)	MEDIUM (3)	t-diff (1) vs (2)		t-diff (2) vs (3)
Underpricing	0.80	1.12	0.71	-2.63		3.52
	(9.11)	(12.82)	(9.20)			
Discounting	0.83	1.13	0.71	-2.49		3.61
	(9.43)	(13.00)	(9.19)			
Offer-day return	-0.03	-0.01	0.00	-2.06		-1.49
	(-4.43)	(-2.49)	(-0.38)			

Underpricing (U) is the logarithm of the ratio of the market price at close on the offer day to the offer price. Discounting (D) is the logarithm of the ratio of prior day to the offer day market price over the offer price. Offer-day return (R) is the logarithm of the ratio of market price on the offer day to the market price on the day prior to the offer. From the definitions, U=D+R. Rights Issues and Open Offers are classified in our analysis as "Other deals". AIM and MM are the two main London markets, Alternative Investment Market and London primary Main Market. The distinction among micro, small and medium-sized SMEs is based on the European Union definition for SMEs.

last two columns of Panel A, we can conclude that in the case of SME firms there are no significant differences in underpricing when they choose PPs versus Other deals or when the listing platform (AIM versus MM) differs.

In Panel C we see underpricing results for SMEs versus large firms, listed on AIM and MM, placing their equity privately. SMEs listed on AIM are underpriced more compared to large firms listed on AIM, but the difference is not statistically significant. On MM, however, SMEs are underpriced more (0.75) compare to large firms (0.20). Offer-day return is close to zero and the main component of underpricing is discounting. The differences in underpricing and discounting in this case are statistically significant. The higher degree of underpricing for SMEs captures the risky nature of these firms. Small and young firms, in need of financing, need to discount their equity more in order to attract institutional investors willing to participate in the PPs and also possibly signal their good quality and growth prospects.

Finally, in Panel D we have underpricing results for differently sized SME companies listed on AIM issuing their equity privately to institutional investors. The results here, like in previous panels of Table 3.4, are driven by discounting and not offer-day return. Small-sized SMEs have the highest underpricing (1.12) and micro- and medium-sized SMEs follow with 0.80 and 0.71 respectively. The differences across the different SME subgroups are statistically significant (see columns 4 and 5 of Panel D). This result support H3.

3.4.2.2 First versus follow-on SEOs

In this section we conduct the same analysis as before distinguishing, however, between first and subsequent SEOs of issuing firms in our sample. We decompose M/B ratios and

underpricing using the Rhodes-Kropf et al. (2005) and Altinkilic and Hansen (2003) methodologies respectively, like in the previous sections. We report results for the first time SEOs versus subsequent ones. The rationale is exploring whether firms are more misvalued, have lower growth prospects and underprice their equity more when they return in market for issuing equity after their first SEO. Results are in Table 3.5.

Table 3.5 - M/B and Mispricing decomposition for first and follow-on SEOs (1995-2015)

PANEL A												
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	First PPs	FO PPs	t-diff	First Other	FO Other	t-diff	First SMEs PPs	FO SMEs PPs	t-diff	First SMEs Other	FO SMEs Other	t-diff
M/B	1.04	0.78	-4.44	0.96	0.86	-0.82	1.14	0.82	-4.26	1.28	0.92	-1.26
	(21.13)	(24.01)		(9.78)	(12.53)		(17.85)	(21.33)		(5.06)	(7.37)	
Growth	1.19	0.91	-6.25	0.71	0.61	-1.11	1.45	1.11	-6.74	1.31	1.01	-1.96
	(31.92)	(36.71)		(9.22)	(11.18)		(33.19)	(44.76)		(10.35)	(12.31)	
Misvaluation	-0.14	-0.13	0.34	0.25	0.26	0.07	-0.31	-0.29	0.33	-0.03	-0.09	-0.31
	(-3.63)	(-4.63)		(3.29)	(4.73)		(-5.88)	(-9.29)		(-0.16)	(-1.04)	
Underpricing	0.58	0.83	3.14	0.39	0.59	1.54	0.77	0.90	1.33	0.80	0.85	0.17
	(8.98)	(18.34)		(3.88)	(6.89)		(8.63)	(17.02)		(3.12)	(5.18)	
Discounting	0.59	0.84	3.19	0.39	0.60	1.59	0.78	0.92	1.36	0.81	0.86	0.18
	(9.05)	(18.52)		(3.89)	(6.93)		(8.75)	(17.25)		(3.16)	(5.19)	
Offer-day return	-0.01	-0.01	-0.89	-0.00	-0.01	-0.90	-0.01	-0.01	-0.55	-0.01	-0.01	-0.15
	(-1.36)	(-3.08)		(-0.42)	(-1.83)		(-2.01)	(-3.70)		(-0.60)	(-1.51)	

Table 3.5 – M/B and Mispricing decomposition for first and follow-on SEOs (1995-2015) (cont.)

PANEL B

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	First	FO		First	FO		First	FO		First	FO	
	SMEs PPs AIM	SMEs PPs AIM	t-diff	SMEs PPs MM	SMEs PPs MM	t-diff	Large PPs AIM	Large PPs AIM	t-diff	Large PPs MM	Large PPs MM	t-diff
M/B	1.13	0.81	-3.92	1.16	0.90	-1.42	0.69	0.51	-1.26	0.99	0.83	-1.28
	(15.80)	(20.10)		(8.32)	(7.23)		(5.98)	(6.33)		(10.38)	(9.59)	
Growth	1.49	1.13	-6.42	1.27	0.93	-2.85	0.57	0.34	-1.99	0.78	0.28	-4.25
	(30.72)	(42.73)		(12.93)	(13.74)		(6.03)	(5.34)		(11.60)	(3.00)	
Misvaluation	-0.35	-0.32	0.47	-0.11	-0.03	0.50	0.12	0.17	0.46	0.22	0.55	3.12
	(-6.05)	(-9.92)		(-0.93)	(-0.33)		(1.26)	(2.64)		(3.84)	(6.22)	
Underpricing	0.82	0.91	0.74	0.53	0.87	1.38	0.37	0.91	2.80	0.10	0.27	1.49
	(8.24)	(16.18)		(2.73)	(5.35)		(2.74)	(6.49)		(1.21)	(3.31)	
Discounting	0.84	0.92	0.71	0.51	0.89	1.53	0.36	0.91	2.83	0.09	0.26	1.45
	(8.41)	(16.39)		(2.65)	(5.46)		(2.69)	(6.50)		(1.14)	(3.22)	
Offer-day return	-0.02	-0.01	0.55	0.02	-0.02	-2.96	0.01	-0.00	-0.73	0.01	0.01	0.49
	(-2.87)	(-3.34)		(2.82)	(-1.65)		(0.77)	(-0.28)		(0.73)	(1.42)	

Table 3.5 reports results from the decomposition of M/B ratios and underpricing according to Rhodes-Kropf et al. (2005) and Altinkilic and Hansen (2003) methodologies respectively. M/B ratios are decomposed into growth and misvaluation components using Rhodes-Kropf et al. (2005) (RKRV) methodology. Underpricing (U) is the logarithm of the ratio of the market price at close on the offer day to the offer price. Discounting (D) is the logarithm of the ratio of prior day to the offer day market price over the offer price. Offer-day return (R) is the logarithm of the ratio of market price on the offer day to the market price on the day prior to the offer. From the definitions, U=D+R. Results for First and Follow-on deals are reported separately for each subgroup o interest. As "First" SEO we consider the first SEO deal of a firm in our sample, while "Follow-on" deals are all the subsequent ones. PPs stands for private placements of equity. As Other deals we consider Rights Issues and Open Offers. AIM and MM refer to Alternative Investment Market (AIM) and London main market (MM) respectively.

Both Panels A and B of Table 3.5 contain growth, misvaluation and underpricing results for different subgroups of firms in our sample. Columns 1 and 2 on Panel A show the results for First versus Follow-on (FO) private placements in our sample. First time PPs have higher M/B ratio (1.04) compared to FO ones (0.78) and the difference is statistically significant. This difference is mainly driven by the significant difference in growth prospects. Both First and FO PPs have growth prospects higher than their respective M/B ratios (1.19 for First PPs and 0.91 for FO PPs). In this case the firms involved are undervalued, with the undervaluation being -0.14 for First time PPs and -0.13 for the FO ones. The difference between the two though is not statistically significant. FO PPs are more underpriced (0.83) than First time PPs (0.58). This result is driven by discounting and not by Offer-day return. For Other deals (RIs and OOs), all the differences in terms of M/B ratios, growth prospects, misvaluation and all the components of underpricing are not found significant (Column 6).

Columns 7, 8 and 10, 11 report similar results to columns 1, 2 and 4, 5, but they are restricted only to SME firms. For SMEs placing their equity privately, M/B ratio is significantly higher in the case of the First PPs (1.14) than FO ones (0.82). This finding is driven by the difference in growth prospects. The RKRV component capturing long-run growth prospects is 1.45 for First PP deals by SMEs and 1.11 for the FO ones. In addition, in both First and FO PPs the companies involved appear undervalued, but the difference in the degree of undervaluation is not significant. Like in columns 1, 2, FO PPs by SMEs leave more money in the table than First time ones. However, the different results for underpricing and discounting are not statistically significant. The pattern observed in the results reported in columns 10 and 11 is similar to the one in columns 4 and 5. Nevertheless, the differences in results between First time and FO deals (RIs,

OOs) are not statistically significant for any of the M/B and underpricing components.

Results in Panel B are focused on PPs. Columns 1, 2 and 4, 5 report results for SMEs on AIM and MM. Columns 7, 8 and 10, 11 show results for large (non-SME) firms on AIM and MM. In columns 1 and 2 of Panel B we see that in the case of SMEs listed on AIM, placing their equity privately with institutional investors, M/B ratio is higher for First time PPs (1.13) compared to FO deals (0.81). This statistically significant difference is driven by growth prospects (1.49 for First time PPs versus 1.13 for FO ones). Both First and FO PPs by SMEs on AIM are undervalued, but the degree of their undervaluation does not differ significantly. In terms of underpricing, FO PPs are more underpriced (0.91) than First time PPs (0.82). However, none of the underpricing components appears significantly different between the two groups of PPs examined.

Some interesting findings can be seen in columns 4 and 5 of Panel B. Here, we focus on MM SMEs using PPs to raise equity financing. Although the overall M/B ratio, misvaluation, underpricing and discounting components are not significantly different between First time and FO PPs, there is a significant difference in growth prospects and Offer-day return. First time PPs by SMEs on MM have higher growth prospects (1.27) than FO PPs (0.93). Also, although the offer-day return is small but positive for first time PP deals, the figure becomes negative for FO PPs.

Large firms listed on AIM and MM and placing their equity privately behave differently in terms of misvaluation compared to SMEs. AIM firms issuing equity through PPs for the first time (columns 7 and 8) have higher overall M/B ratio, more growth prospects and lower underpricing (and discounting) than FO PP issuers. However, apart from underpricing and discounting, none of these differences appear statistically significant.

FO PPs leave more money on the table (0.91) compared to First time equity issuers (0.37). These results are driven by discounting.

Finally, in columns 10 and 11 we see the differences in results between First time versus FO PPs done by large (non-SME) firms listed on the MM. Interestingly, companies in their First time PP have much higher growth prospects (0.78) than in subsequent placements (0.28). Furthermore, while both First and FO PPs firms are overvalued, the degree of overvaluation is higher in FO cases (0.55) than First time ones (0.22). The differences in growth prospects and misvaluation are statistically significant. Underpricing and discounting appear higher for firms returning to the market to raise financing after their first SEO, but the differences are not statistically significant.

Summing up, in this section we explore whether conducting first time or follow-on SEOs has an impact on M/B and underpricing components. We find that, on average, larger firms in our sample are overvalued while SMEs, and in particular the ones making use of PPs when they want to raise equity financing, are undervalued. Across all the different subgroups for which results are reported in Table 3.5, growth prospects in follow-on SEOs are lower compared to first time ones and discounting higher. An interpretation of these findings is that as long-run growth prospects of firms becoming less, firms need to provide higher discounts when in need to issue equity, to attract investors.

3.4.3 Short-run performance

In this section we present Cumulative Abnormal returns (CARs) results from the short-run performance analysis for specific groups of interest in our sample. Abnormal returns are computed by employing the expected returns computed from market models estimated from an estimation period prior to the issue date as well as by

employing expected returns computed from market returns (i.e. market adjusted returns). The event windows presented in all our tables are (in trading days): [-1, +1], [-5, +5], [-1, 0], [-2, 0], [-10, 0], [0, +1] and [0, +2]. These windows capture the market reaction, respectively, a day before and after the issue date, a week before and after the issue date, a day prior to the issue date to the issue date, two days prior to the issue date to the issue date, two weeks prior to the issue date to the issue date, from the issue date to the day after and finally from the issue date to two days after the issue date.[65].

In Table 3.6 we focus on SMEs. Different subgroups of SMEs are presented in the panels of Table 3.6. Panel A presents results of SMEs listed on MM and AIM and their difference in terms of CARs. Panel B focuses on the short-run performance differences between First and Follow-on SEOs. In Panels C, D and E misvaluation, growth prospects and underpricing components come into play. In Panel C we report the CAR differences between overvalued and undervalued SMEs. Panel D has the performance differences between SMEs with high growth prospects versus SMEs with low growth prospects. Finally, Panel E of Table 3.6 reports the CARs of SMEs with high versus low underpricing.

In the first two columns of Panel A we report the CARs for all SMEs in the sample period we examine. In the ten-day run-up until the issue date, SME firms have a positive and significant (at 1% level) return of about 1.7 per cent. In the days around the equity issue we see that the return is negative but insignificant. In the days after the SEO issue there is negative but insignificant performance. Overall, during the period two weeks before the issue date there are significantly (at 1% level) positive abnormal returns (1.7 per cent). Focusing on the performance of SMEs listed in different markets (MM versus AIM)

65 The number of days reported for the estimation windows refer to trading days.

Table 3.6 – Cumulative Abnormal Returns (CARs) of Seasoned Equity Offeriings (SEOs) by Small and Medium Enterprises (SMEs)

Panel A: CARs for Small and Medium Sized Enterprises (SMEs) on the Main Market (MM) and Alternative Investment Marke								
	Overall (N = 1353)		Main Market (N = 240)		AIM (N = 1113)		Difference	
Window	CAR	Std error	CAR	Std error	CAR	Std error	CAR	Std error
- 1,+1	-0.0066	(0.0214)	0.0053*	(0.0029)	-0.0092	(0.2704)	-0.0144	(0.0300)
- 5,+5	-0.0035	(0.0086)	0.0065	(0.0123)	-0.0056	(0.1059)	-0.0122	(0.0210)
- 1,0	0.0042*	(0.0022)	0.0228	(0.0226)	0.0352*	(0.0183)	0.0125	(0.0266)
- 2,0	0.0045*	(0.0025)	0.0758**	(0.0310)	0.1103***	(0.0279)	0.0345	(6.5292)
- 10,0	0.0170***	(0.0058)	0.0056	(0.0039)	0.0043**	(0.0017)	-0.0014	(0.1616)
0,+1	-0.0093	(0.0114)	0.0144***	(0.0049)	0.0069	(0.0061)	-0.0076	(0.0066)
0,+2	-0.0059	(0.1209)	0.0264***	(0.0078)	0.0149	(0.0091)	-0.0114	(0.0085)
Panel B: CARs for Small and Medium Sized Enterprises (SMEs) in First and Follow-On SEOs								
	Overall (N = 1353)		First SEO (N = 87)		Follow On SEOs (N = 1266)		Difference	
Window	CAR	Std error	CAR	Std error	CAR	Std error	CAR	Std error
- 1,+1	-0.0066	(0.0214)	-0.0069	(0.0517)	-0.0027	(0.0128)	0.0042	(0.0337)
- 5,+5	-0.0035	(0.0086)	-0.0051	(0.0469)	0.0196	(0.0203)	0.0246	(0.0350)
- 1,0	0.0042*	(0.0022)	0.0317**	(0.0149)	0.0524	(0.0424)	0.0207	(0.0452)
- 2,0	0.0045*	(0.0025)	0.1040***	(0.0236)	0.1078**	(0.0537)	0.0039	(0.0070)
- 10,0	0.0170***	(0.0058)	0.0039**	(0.0015)	0.0127	(0.0155)	0.0087	(0.0286)
0,+1	-0.0093	(0.0114)	0.0081**	(0.0039)	0.0094	(0.0311)	0.0012	(0.0041)
0,+2	-0.0059	(0.1209)	0.0159**	(0.0069)	0.0324	(0.0216)	0.0165	(0.0286)

Table 3.6 – Cumulative Abnormal Returns (CARs) of Seasoned Equity Offeriings (SEOs) by Small and Medium Enterprises (SMEs) (cont.)

Panel C: CARs for SEOs by Small and Medium Sized Enterprises (SMEs) that are Overvalued vs. Undervalued								
	Overall (N = 1353)		Undervalued (N = 307)		Overvalued (N = 585)		Difference	
Window	CAR	Std error	CAR	Std error	CAR	Std error	CAR	Std error
- 1,+1	-0.0066	(0.0214)	-0.0022	(0.0036)	0.0011	(0.0007)	0.0033**	(0.0014)
- 5,+5	-0.0035	(0.0086)	0.0130	(0.0080)	-0.0023	(0.0058)	-0.0153	(0.0165)
- 1,0	0.0042*	(0.0022)	0.0894***	(0.0153)	-0.0285	(0.0308)	-0.1179***	(0.0247)
- 2,0	0.0045*	(0.0025)	0.1675***	(0.0265)	-0.0469	(0.0396)	-0.2144***	(0.0425)
- 10,0	0.0170***	(0.0058)	0.0075**	(0.0031)	0.0085***	(0.0008)	0.0010	(0.0007)
0,+1	-0.0093	(0.0114)	0.0138**	(0.0065)	0.0056**	(0.0025)	-0.0082	(0.0731)
0,+2	-0.0059	(0.1209)	0.0340***	(0.0105)	-0.0060	(0.8240)	-0.0400**	(0.0183)
Panel D: CARs for SEOs by Small and Medium Sized Enterprises (SMEs) with High vs. Low Growth Prospects								
	Overall (N = 1353)		Low Growth (N = 462)		High Growth (N = 379)		Difference	
Window	CAR	Std error	CAR	Std error	CAR	Std error	CAR	Std error
- 1,+1	-0.0066	(0.0214)	0.0028**	(0.0014)	-0.0083	(0.0480)	-0.0111	(0.0262)
- 5,+5	-0.0035	(0.0086)	-0.0060	(0.0076)	-0.0010	(0.0017)	0.0050	(0.0038)
- 1,0	0.0042*	(0.0022)	0.0192	(0.0185)	0.0561**	(0.0222)	0.0369	(0.0234)
- 2,0	0.0045*	(0.0025)	0.0549*	(0.0281)	0.1673***	(0.0344)	0.1124**	(0.0489)
- 10,0	0.0170***	(0.0058)	0.0019	(0.0021)	0.0063**	(0.0031)	0.0044	(0.0045)
0,+1	-0.0093	(0.0114)	0.0024	(0.0133)	0.0113	(0.0072)	0.0089*	(0.0052)
0,+2	-0.0059	(0.1209)	0.0062	(0.0164)	0.0270***	(0.0096)	0.0208**	(0.0101)

Table 3.6 – Cumulative Abnormal Returns (CARs) of Seasoned Equity Offerings (SEOs) by Small and Medium Enterprises (SMEs) (cont.)

Panel E: CARs for SEOs by Small and Medium Sized Enterprises (SMEs) with High vs. Low Underpricing								
	Overall (N = 1353)		Low Underpricing (N = 373)		High Underpricing (N = 559)		Difference	
Window	CAR	Std error	CAR	Std error	CAR	Std error	CAR	Std error
- 1,+1	-0.0066	(0.0214)	-0.0177	(0.0156)	0.0118***	(0.0029)	0.0296***	(0.0109)
- 5,+5	-0.0035	(0.0086)	-0.0212	(0.0222)	0.0169*	(0.0093)	0.0381**	(0.0158)
- 1,0	0.0042*	(0.0022)	0.0070	(0.0065)	0.0464	(0.0320)	0.0394	(0.1030)
- 2,0	0.0045*	(0.0025)	0.0536*	(0.0295)	0.1530***	(0.0531)	0.0993	(0.0891)
- 10,0	0.0170***	(0.0058)	-0.0039**	(0.0015)	0.0136***	(0.0034)	0.0175***	(0.0065)
0,+1	-0.0093	(0.0114)	-0.0064	(0.0059)	0.0235***	(0.0054)	0.0299***	(0.0082)
0,+2	-0.0059	(0.1209)	-0.0011	(0.0019)	0.0298***	(0.0079)	0.0308***	(0.0112)

Abnormal returns are computed by employing market models estimated from an estimation period prior to the issue date. The SEOs were conducted on either the Main Market or the Alternative Investment Market (AIM) of the London Stock Exchange from 1995 to 2015. SMEs refer to small and medium sized enterprises while Large to the rest. First SEO represents instances when a firm issued its first SEO and Follow-On SEOs to the later offerings. Overvalued and Undervalued represent upper and lower tercile firms respectively when ranked by misvalaution. Misvaluation for a firm is defined as its market value 30 days before the issue date less the fundamental value estimated from the latest financial statements available prior to the issue date, Fundamental values are themselves estimated from the valuation model specified by Rhodes-Kropf, Robinson and Vsiwanathan (2005). Low growth and High growth represent firms that had low or high growth prospects respectively, where growth values were estimated from the valuation model specified by Rhodes-Kropf, Robinson and Vsiwanathan (2005). High and Low Underpricing refer to measures of underpricing of the issue and is specified by Altinkilic and Hansen (2003) and compares the offer price to the market price after the issue date. Significance levels at the 1%, 5% and 10% levels are represented by ***, ** and * respectively, while standard errors are reported in parentheses.

we see some interesting findings. In the two days before the company raises their equity, AIM listed SMEs have positive abnormal returns of 11.03 percent significant at the 1% level and the performance of MM listed SMEs for the same window is also a positive and significant at 1% percent, but lower than that of AIM SMEs. However, the difference in short-run performance of SMEs listed on MM versus AIM listed SMEs for this estimation window is not statistically significant. Around the event date (issue date) while the main market returns are positive and significant (0.5 percent) it is negative though insignificant among AIM firms and the difference is also statistically insignificant. In the windows after the issue date, used in our analysis, [0, +1] and [0, +2], we see that SMEs in both the main market and AIM have positive CARs, which are significant on the main market but not for SME issuers on AIM. Overall, in the estimation windows spanning from 10 days before to 5 days after the equity issue both MM and AIM SMEs have positive and significant abnormal returns. More specifically, CARs for AIM listed SMEs are 11.03 percent and significant at 1% level, while for MM listed SMEs 7.58 per cent and significant at 1% level. It appears that the positive market reaction in the case of AIM SMEs is bigger compared to the case of MM listed SMEs, however the difference between the abnormal returns observed is not statistically significant. The most important conclusion from Panel A of Table 3.6 is that in the case of SMEs, being listed on MM or AIM does not make a statistically significant difference in the abnormal returns for the estimation windows we use in our analysis.

In Panel B of Table 3.6 we report CARs for First versus Follow-on SEOs by SMEs and the differences between these two groups. In the two days prior to the equity issue [-2, 0] CARs for First time SEOs are a positive and significant 10.40 percent and CARs for Follow-on SEOs are 10.78 percent. Both results are statistically significant at 1% and 5%

levels respectively though the difference is not significant. While around the event date both groups' abnormal returns are negative they are statistically insignificant. During the short post-issue period from the issue date up to one or two days after the issue date [0, +1] and [0,+2], the abnormal returns for the both First SEO and Follow-On subgroups are positive. Overall First time SEO firms experience positive and significant abnormal returns in the run up to the issue date and in the two days following and are significant at the 5% level. While the CARs to Follow On SEOs are always higher than for First SEOs we do not observe significant differences in CARs between these two groups. Given the results reported in Panel B, we can conclude that, on average, the markets react significantly positively to First time SEOs compared to Follow-on SEOs though the difference is not significant.

In Panel C of Table 3.6 we report CARs for overvalued versus undervalued SEOs by SMEs and the differences between these two groups. In the period leading up to the equity issue [-10, 0] CARs for undervalued SEOs are lower (0.75 percent) than CARs for overvalued SEOs (0.85 percent). Both results are statistically significant at the 5% level but their difference is insignificant. In windows immediately prior to the issue date, [-2, 0] and [-1, 0], CARs for SEOs by undervalued SMEs are positive (16.75 percent and 8.94 percent respectively) and significant at 1% and, while negative and insignificant, in both windows, for overvalued SEOs, their differences are statistically significant. In the two days after the issue date [0, +2], the abnormal returns for undervalued firms are positive (3.40 percent) and significant while for overvalued firms they are positive and significant for the day following the issue, [0, +1]. The difference between the overvalued and undervalued groups, for, [0, +2], is significant at the 5% level. Based on our findings in Panel C we can infer that in the case of SME SEOs, the market reacts

significantly positively during the run-up period to the equity issue, only for undervalued firms. However, after the equity is issued there is a positive reaction for overvalued and undervalued firms.

Panel D of Table 3.6 shows CARs for SME SEOs with high versus low growth prospects and the differences between these two groups. In the run up to the issue date, [-2, 0] estimation window, CARs for high growth SEOs are positive (16.73 percent) and significant at 1% level. CARs for low growth SEOs are also positive (5.49 percent) and significant. The difference between the two groups is significant at 5%. Around the issue date both the two sub-sample returns and their differences are statistically insignificant, except for the [-1, 1] window for low growth issuers. During the period up to two days after the issue date [0, +2], the abnormal returns for high growth firms are positive (2.70 percent) and significant while for low growth firms slightly positive (0.62 percent) and insignificant. Markets react positively when they expect that the issuing firm has high growth prospects and raises equity funds to finance positive NPV projects.

In Panel E of Table 3.6 we report CARs for SMEs issuing equity with high underpricing versus low underpricing. In the two-day period leading up to the equity issue [-2, 0] CARs for highly underpriced SEOs are higher (15.30 percent) than CARs for SEOs with low underpricing (5.36 percent). The results for highly underpriced SEOs by SMEs are statistically significant at 1% level, but the CARs for low underpriced SEOs are not significant while the difference between the abnormal returns results for this estimation window is not significant. Over the days around the event date there is a positive (1.18 percent) market reaction, significant at 1% level, for highly underpriced SEOs. For the same event window, SEOs with low levels of underpricing have a negative and

insignificant CAR. However, the difference between these two subgroups is statistically significant at 1% level. During the two-day period following the issue date [0, +2], the abnormal returns for highly underpriced firms are positive (2.98 percent) and significant at the 1% level while for firms with lower levels of underpricing they are negative (-0.11 percent) but insignificant. The difference in CARs between firms with high versus firms with low underpricing is significant at 1% level. Based on our findings in Panel E we can infer that in the case of SME SEOs, the market reacts positively during the run-up period before the equity issue for highly underpriced firms and, after the equity is issued, there is a continued significantly positive reaction for these highly underpriced firms. Before the equity issue the market cannot accurately predict the underpricing of the upcoming SEOs and when a firm is offering their equity with high underpricing it creates incentives to investors to buy the underpriced shares. Thus, the reaction of the market in the run-up to the issue is positive.

In Table 3.7 we focus on Private placements. Different subgroups of PPs are presented in the panels of Table 3.7. Panel A presents results of PPs conducted by large firms versus SMEs and their difference in terms of CARs. Panel B has CAR results for PP of firms listed on MM versus AIM, while Panel C reports CARs for First versus Follow-on PPs. In Panels D, E and F there are CAR differences between overvalued versus undervalued PPs, PPs with high growth prospects versus PPs with low growth prospects and PPs with high versus low underpricing, respectively.

Table 3.7 - Cumulative Abnormal Returns (CARs) of Seasoned Equity Offerings (SEOs) via Private Placements (PPs)

Panel A: CARs of Private Placements by Small and Medium Sized Enterprises (SMEs) and Large firms								
	Overall (N = 1431)		Large firms (N = 425)		SMEs (N = 1006)		Difference	
Window	CAR	Std error	CAR	Std error	CAR	Std error	CAR	Std error
- 1,+1	0.0026**	(0.0013)	0.0033	(0.0046)	0.0023*	(0.0012)	-0.0010	(0.2105)
- 5,+5	0.0299***	(0.0091)	0.0106	(0.0072)	0.0380**	(0.0176)	0.0275	(4.4152)
- 1,0	0.0046*	(0.0024)	0.0285*	(0.0165)	0.0799***	(0.0264)	0.0513	(0.1019)
- 2,0	0.0071**	(0.0027)	0.0364	(0.0350)	0.1892***	(0.0390)	0.1527**	(0.0736)
- 10,0	0.0221***	(0.0056)	0.0044**	(0.0019)	0.0082**	(0.0040)	0.0038	(0.0041)
0,+1	-0.0011	(0.0010)	0.0085**	(0.0043)	0.0148**	(0.0068)	0.0062	(12.7504)
0,+2	0.0045*	(0.0024)	0.0116**	(0.0057)	0.0265***	(0.0087)	0.0149	(0.0267)
Panel B: CARs for Private Placements on the Main Market (MM) and Alternative Investment Market (AIM)								
	Overall (N = 1431)		Main Market (N = 406)		AIM (N = 1025)		Difference	
Window	CAR	Std error	CAR	Std error	CAR	Std error	CAR	Std error
- 1,+1	0.0026**	(0.0013)	0.0118*	(0.0068)	-0.0011**	(0.0004)	-0.0129	(0.0164)
- 5,+5	0.0299***	(0.0091)	0.0184	(0.0140)	0.0344**	(0.0168)	0.0160	(0.0250)
- 1,0	0.0046*	(0.0024)	0.0291	(0.0194)	0.0786***	(0.0248)	0.0495	(0.6408)
- 2,0	0.0071**	(0.0027)	0.0409*	(0.0218)	0.1846***	(0.0419)	0.1436	(0.2221)
- 10,0	0.0221***	(0.0056)	0.0078***	(0.0014)	0.0068	(0.0045)	-0.0009	(0.0047)
0,+1	-0.0011	(0.0010)	0.0149***	(0.0027)	0.0121**	(0.0060)	-0.0028	(0.0027)
0,+2	0.0045*	(0.0024)	0.0158**	(0.0066)	0.0246**	(0.0098)	0.0088	(0.0913)

Table 3.7 - Cumulative Abnormal Returns (CARs) of Seasoned Equity Offerings (SEOs) via Private Placements (PPs) (cont.)

Panel C: CARs in various windows for Private Placements in First and Follow-On SEOs								
	Overall (N = 1431)		First SEO (N = 167)		Follow On SEOs (N = 1264)		Difference	
Window	CAR	Std error	CAR	Std error	CAR	Std error	CAR	Std error
- 1,+1	0.0026**	(0.0013)	0.0027**	(0.0011)	0.0015	(0.0013)	-0.0012	(0.2538)
- 5,+5	0.0299***	(0.0091)	0.0315**	(0.0142)	0.0172**	(0.0069)	-0.0143	(0.0161)
- 1,0	0.0046*	(0.0024)	0.0680***	(0.0245)	0.0390**	(0.0148)	-0.0290	(0.0181)
- 2,0	0.0071**	(0.0027)	0.1496***	(0.0392)	0.0997***	(0.0337)	-0.0500	(0.0317)
- 10,0	0.0221***	(0.0056)	0.0074**	(0.0030)	0.0048	(0.0123)	-0.0026	(0.0088)
0,+1	-0.0011	(0.0010)	0.0135***	(0.0046)	0.0080**	(0.0037)	-0.0055	(0.0096)
0,+2	0.0045*	(0.0024)	0.0221***	(0.0061)	0.0223***	(0.0072)	0.0003	(0.0002)
Panel D: CARs for Private Placement that are Overvalued vs. Undervalued								
	Overall (N = 1431)		Undervalued (N = 364)		Overvalued (N = 566)		Difference	
Window	CAR	Std error	CAR	Std error	CAR	Std error	CAR	Std error
- 1,+1	0.0026**	(0.0013)	-0.0074	(0.0186)	0.0240***	(0.0079)	0.0314***	(0.0087)
- 5,+5	0.0299***	(0.0091)	-0.0022	(0.0076)	0.1041***	(0.0318)	0.1063***	(0.0387)
- 1,0	0.0046*	(0.0024)	0.0227	(0.0153)	0.1344	(0.1365)	0.1118	(2.7266)
- 2,0	0.0071**	(0.0027)	0.0382	(0.0265)	0.2323*	(0.1403)	0.1941	(0.3584)
- 10,0	0.0221***	(0.0056)	-0.0057	(0.0131)	0.0279***	(0.0064)	0.0337***	(0.0087)
0,+1	-0.0011	(0.0010)	-0.0069	(0.1077)	0.0417***	(0.0126)	0.0486***	(0.0147)
0,+2	0.0045*	(0.0024)	-0.0036	(0.0305)	0.0483**	(0.0189)	0.0518**	(0.0197)

Table 3.7 - Cumulative Abnormal Returns (CARs) of Seasoned Equity Offerings (SEOs) via Private Placements (PPs) (cont.)

Panel E: CARs for Private Placements with High vs. Low Growth Prospects								
	Overall (N = 1431)		Low Growth (N = 420)		High Growth (N = 478)		Difference	
Window	CAR	Std error	CAR	Std error	CAR	Std error	CAR	Std error
- 1,+1	0.0026**	(0.0013)	0.0066	(0.0057)	0.0015***	(0.0004)	-0.0051	(0.0101)
- 5,+5	0.0299***	(0.0091)	0.0565	(0.0377)	0.0260***	(0.0077)	-0.0305	(0.0202)
- 1,0	0.0046*	(0.0024)	0.0966***	(0.0354)	0.0940***	(0.0235)	-0.0027	(0.0022)
- 2,0	0.0071**	(0.0027)	0.1796**	(0.0838)	0.1902***	(0.0376)	0.0106**	(0.0047)
- 10,0	0.0221***	(0.0056)	0.0070**	(0.0029)	0.0095	(0.0058)	0.0025	(0.0028)
0,+1	-0.0011	(0.0010)	0.0101***	(0.0029)	0.0209*	(0.0110)	0.0109	(0.0079)
0,+2	0.0045*	(0.0024)	0.0161**	(0.0064)	0.0373***	(0.0140)	0.0212*	(0.0113)
Panel F: CARs for Private Placements with High vs. Low Underpricing								
	Overall (N = 1431)		Low Underpricing (N = 364)		High Underpricing (N = 566)		Difference	
Window	CAR	Std error	CAR	Std error	CAR	Std error	CAR	Std error
- 1,+1	0.0026**	(0.0013)	-0.0074	(0.0186)	0.0240***	(0.0079)	0.0314***	(0.0087)
- 5,+5	0.0299***	(0.0091)	-0.0022	(0.0076)	0.1041***	(0.0318)	0.1063***	(0.0387)
- 1,0	0.0046*	(0.0024)	0.0227	(0.0153)	0.1344	(0.1365)	0.1118	(2.7266)
- 2,0	0.0071**	(0.0027)	0.0382	(0.0265)	0.2323*	(0.1403)	0.1941	(0.3584)
- 10,0	0.0221***	(0.0056)	-0.0057	(0.0131)	0.0279***	(0.0064)	0.0337***	(0.0087)
0,+1	-0.0011	(0.0010)	-0.0069	(0.1077)	0.0417***	(0.0126)	0.0486***	(0.0147)
0,+2	0.0045*	(0.0024)	-0.0036	(0.0305)	0.0483**	(0.0189)	0.0518**	(0.0197)

Abnormal returns are computed by employing market models estimated from an estimation period prior to the issue date. The SEOs were conducted on either the Main Market or the Alternative Investment Market (AIM) of the London Stock Exchange from 1995 to 2015. SMEs refer to small and medium sized enterprises while Large to the rest. First SEO represents instances when a firm issued its first SEO and Follow-On SEOs to the later offerings. Overvalued and Undervalued represent upper and lower tercile firms respectively when ranked by misvalaution. Misvaluation for a firm is defined as its market value 30 days before the issue date less the fundamental value estimated from the latest financial statements available prior to the issue date, Fundamental values are themselves estimated from the valuation model specified by Rhodes-Kropf, Robinson and Vsiwanathan (2005). Low growth and High growth represent firms that had low or high growth prospects respectively, where growth values were estimated from the valuation model specified by Rhodes-Kropf, Robinson and Vsiwanathan (2005). High and Low Underpricing refer to measures of underpricing of the issue and is specified by Altinkilic and Hansen (2003) and compares the offer price to the market price after the issue date. Significance levels at the 1%, 5% and 10% levels are represented by ***, ** and * respectively, while standard errors are reported in parentheses.

Panel A of Table 3.7 has results for the overall group of PPs as well as large versus SME firms subgroups. During the pre-event window we examine, [-10, 0], PP firms have positive (2.21 percent) returns and significant at 1%. Around the event, [-1, +1], the returns are still positive (0.26 percent) and significant at 5%. Up to two days after the placement, returns for PPs are significant and positive (0.45 percent). In the overall [-5, +5] window, CARs for PPs are positive (2.99 percent) and significant at 1% level. This is a result driven by the large, positive pre-placement CARs.

Turning to the PPs done by large firms versus SMEs, we see some interesting patterns. During the two days before the placement, both large firms and SMEs have positive CARs. SME CARs are positive (18.92 per cent) and higher than the positive CARs for larger firms (3.64 percent). These two sub-sample CARs for SMEs and large firms are significant at 1% level and insignificant respectively, though the difference between the two is significant. Around the date of the PPs, SMEs have positive (3.8 percent) CARs which are significant at the 5% level, though the returns for larger firms, as well as the difference in CARs between SMEs and larger companies are not significant. In the two days following the placement, both SMEs (2.65 percent) and larger firms (1.16 percent) have positive and significant returns at the 5% and 1% levels respectively. The difference between the two is, however, insignificant.

In Panel B of Table 3.7, we focus on the performance of PPs from firms listed on different markets (MM versus AIM). In the two days running up to the issue date, both AIM listed firms and MM firms have positive abnormal returns of 18.46 per cent, significant at the 1% level and 4.09 percent, significant at the 10% level, respectively. Nevertheless, the results are not statistically significantly different from each other.

Around the issue date, [-1, +1] MM listed firms issuing equity privately have positive CARs (1.18 percent) and statistically significant at 10% level. CARs for AIM listed firms, however, are negative and significant (-0.11 percent). The difference in CARs between the two subgroups of firms in this event window is insignificant. In the immediate post-issue period, [0, +2], we see that in both markets, PP issuers have significant positive CARs. Market reaction for AIM listed firms is 2.46 percent, while for MM listed firms 1.58 percent, both significant at 5%. The difference in CARs for this window is insignificant. It appears that the positive market reaction in the case of AIM companies is bigger compared to the case of MM companies; however the difference between the abnormal returns observed is not statistically significant.

Panel C of Table 3.7 has CAR results for First versus Follow-on PPs and the differences between these two groups. In the period leading up to the equity issue [-10, 0] CARs for First time PPs are higher (0.74 percent) than CARs for Follow-on PPs (0.48 percent) though only the former result is statistically significant (at the 5% level) and their difference is also not significant. Around the event date [-5, +5] both sub-sample abnormal returns are positive and significant at 5% though they are not significantly different from each other. In the case of First time PPs CARs are 3.15 percent while in the case of Follow-on PPs are 1.72 per cent. During the period up to 2 days after the issue date [0, +2], the abnormal returns for both the subgroups are insignificantly different from each other while they are both positive and significant at the 1% level (2.21 percent for First SEO vs. 2.23 percent for Follow On). Given the results reported in this panel we can conclude that, on average, the markets react more positively in the First time PPs compared to Follow-on ones.

In Panel D of Table 3.7 we report CARs for overvalued versus undervalued cases of PPs and the differences between these two groups. In the period leading up to the equity issue [-10, 0] CARs for undervalued PPs are negative and significantly lower (-0.57 percent) than the positive and significant CARs for overvalued PPs (2.79 percent). Around the issue date [-5, +5,], CARs for the undervalued sub-sample is negative (-0.22 percent) though not significant, but it is significantly lower than the CARs for overvalued firms, which is 10.41 percent and significant at the 1% level. Similarly, in the two days after the issue date [0, +2,], CARs for the undervalued sub-sample is negative (-0.36 percent) and not significant but significantly lower than the CARs for overvalued firms, which are 4.83 percent and significant at the 5% level. From the above results, we infer that in the case of PPs, while the market reacts, on average, positively to a privately placed SEO, the market significantly discriminates between undervalued and overvalued firms by responding more positively to overvalued firms raising equity than to the undervalued firms raising equity.

Panel E of Table 3.7 shows CARs for PPs of firms with high versus low growth prospects and the differences between these two groups. In the pre-issue window [-2, 0], CARs for low growth PPs are positive (17.96 percent) and significant at the 5% level while CARs for high growth PPs are positive (19.02 percent) and significant at the 1% level and higher than for the low growth sub-sample. The difference between the two groups is significant at the 5% level. Around the issue date, [-5, +5] both low and high growth sub-samples have positive CARs of 5.65% and 2.60% although only for high growth PPs they are statistically significant (at 1% level). During the period up to 2 days after the issue date [0, +2], the abnormal returns are positive and significant for both high and low growth sub-samples, (3.73 percent and 1.61 percent respectively) which for high

growth firms is significantly higher than for low growth firms. Markets reacts quite positively when firms raise equity via private placements and discriminate between them according to who has better growth prospects. When the markets expect that the issuing firm has higher growth prospects, they appear to anticipate that the equity raised will finance positive NPV projects since the reaction is positive and higher.

In Panel F of Table 3.7 we report CARs for PPs with high underpricing versus low underpricing. Generally, as we saw in earlier sections, firms raising equity via PPs have, on average, higher underpricing compared to firms raising equity via other types of equity deals (Rights Issues and Open Offers). However, the degree of underpricing may differ among firms raising equity via PPs. In the period leading up to the equity issue [-10, 0] CARs for highly underpriced PPs are higher (2.79 percent) than CARs for PPs with lower underpricing (-0.57 percent). The results for highly underpriced PPs are statistically significant at 1% level, but the CARs for low underpriced PPs are not significant. The difference between the two sub-samples is significant at 1% level. On the days around the issue date [-5, +5] there is a positive (10.41 percent) market reaction for highly underpriced PPs, significant at 1% level. For PPs with low levels of underpricing, there is a negative CAR (-0.22 percent), though it is insignificant. However, the difference between these two subgroups is statistically significant at 1% level. During the two-day period after the issue date [0, +2], the abnormal returns for highly underpriced firms are positive (4.83 percent) and significant at the 1% level, while for firms with lower levels of underpricing they are negative (-0.36 per cent) but insignificant. The difference in CARs between firms with high versus firms with low underpricing is significant at 5% level. Based on these findings, we can infer that, in the case of PPs, underpricing works as an incentive for institutional investors to purchase

the equity placed by the firm. The higher the underpricing, the more positive the reaction of the market before the event and this differential response continues in the immediate aftermath of the issue.

In Table 3.8 we focus on private placements (PPs) conducted by small and medium sized firms (SMEs). Different subgroups of private placements by SME are presented in the panels of Table 3.8. Panel A has CAR results for SME PPs of firms listed on MM versus AIM, while Panel B reports CARs for First versus Follow-on PPs by SMEs. In Panels C, D and E there are CAR differences between overvalued versus undervalued PPs conducted by SMEs, SME PPs with high growth prospects versus SME PPs with low growth prospects and SME PPs with high versus low underpricing, respectively.

In the first two columns of Panel A, we report the overall SME PPs CARs for the sample period we examine. Prior to the issue date [-10, 0] SME firms placing their equity privately have a positive and significant (at 1% level) abnormal return of 1.57 percent. In the days around the PPs [-5, +5], abnormal return are almost zero and insignificant.

Focusing on the performance of SMEs listed in different markets (MM versus AIM) that issue their equity privately, we see that over the two days up to the issue date [-2, 0], AIM listed SMEs that issue their equity privately have positive abnormal returns of 10.20 percent, significant at the 1% level which is higher than the abnormal returns for SMEs listed on the MM of 5.43 percent, (also significant, at the 5% level) though the difference between the two is not statistically significant.

In the post issue period [0, +2], we see that SME that privately place equity in the main market experience positive abnormal returns of 2.61 percent and those in the AIM have 1.35 percent. However, only the main market sub-sample, has significant CARs and the

Table 3.8 - Cumulative Abnormal Returns (CARs) of Seasoned Equity Offerings (SEOs) via Private Placements (PPs) by Small and Medium Enterprises (SMEs)

Panel A: CARs for Private Placements by Small and Medium Sized Enterprises (SMEs) on the Main Market (MM) and Alterna								
	Overall (N = 933)		Main Market (N = 165)		AIM (N = 768)		Difference	
Window	CAR	Std error	CAR	Std error	CAR	Std error	CAR	Std error
- 1,+1	-0.0007	(0.0009)	0.0158	(0.0115)	-0.0043	(0.0072)	-0.0201	(0.0258)
- 5,+5	0.0018	(0.0021)	0.0197	(0.0178)	-0.0021	(0.0144)	-0.0218	(0.0157)
- 1,0	0.0028	(0.0018)	0.0338	(0.0232)	0.0343**	(0.0145)	0.0005	(0.0013)
- 2,0	0.0038**	(0.0019)	0.0543**	(0.0256)	0.1020***	(0.0307)	0.0477	(0.0920)
- 10,0	0.0157***	(0.0057)	0.0085**	(0.0033)	0.0027	(0.0021)	-0.0058	(0.0618)
0,+1	-0.0036	(0.1154)	0.0199***	(0.0063)	0.0033	(0.0047)	-0.0166*	(0.0099)
0,+2	-0.0010	(0.0035)	0.0261**	(0.0099)	0.0135	(0.0093)	-0.0126	(0.0089)

Panel B: CARs in various windows for Private Placements by Small and Medium Sized Enterprises (SMEs) in First and Follo								
	Overall (N = 933)		First SEO (N = 72)		Follow On SEOs (N = 861)		Difference	
Window	CAR	Std error	CAR	Std error	CAR	Std error	CAR	Std error
- 1,+1	-0.0007	(0.0009)	-0.0008	(0.0011)	0.0004	(0.0009)	0.0012	(0.0058)
- 5,+5	0.0018	(0.0021)	0.0003	(0.0006)	0.0195	(0.0154)	0.0192	(0.0248)
- 1,0	0.0028	(0.0018)	0.0325***	(0.0121)	0.0545*	(0.0311)	0.0220	(0.0221)
- 2,0	0.0038**	(0.0019)	0.0920***	(0.0257)	0.1119**	(0.0526)	0.0199	(0.0199)
- 10,0	0.0157***	(0.0057)	0.0029	(0.0018)	0.0139	(0.0121)	0.0109	(0.0307)
0,+1	-0.0036	(0.1154)	0.0062	(0.0039)	0.0071	(0.0096)	0.0009	(0.0068)
0,+2	-0.0010	(0.0035)	0.0150**	(0.0070)	0.0250	(0.0206)	0.0100	(0.0302)

Table 3.8 - Cumulative Abnormal Returns (CARs) of Seasoned Equity Offerings (SEOs) via Private Placements (PPs) by Small and Medium Enterprises (SMEs) (cont.)

Panel C: CARs for Private Placements by Small and Medium Sized Enterprises (SMEs) that are Overvalued vs. Undervalued								
	Overall (N = 933)		Undervalued (N = 222)		Overvalued (N = 407)		Difference	
Window	CAR	Std error	CAR	Std error	CAR	Std error	CAR	Std error
- 1,+1	-0.0007	(0.0009)	0.0025	(0.0078)	0.0110***	(0.0027)	0.0085***	(0.0032)
- 5,+5	0.0018	(0.0021)	0.0103	(0.0081)	0.0102	(0.0073)	-0.0001	(0.0010)
- 1,0	0.0028	(0.0018)	0.0934***	(0.0162)	-0.0330	(0.0330)	-0.1264***	(0.0287)
- 2,0	0.0038**	(0.0019)	0.1620***	(0.0303)	-0.0502	(0.0414)	-0.2122***	(0.0492)
- 10,0	0.0157***	(0.0057)	0.0039	(0.0059)	0.0126***	(0.0008)	0.0087**	(0.0043)
0,+1	-0.0036	(0.1154)	0.0038	(0.0065)	0.0128*	(0.0071)	0.0090	(0.0070)
0,+2	-0.0010	(0.0035)	0.0320**	(0.0133)	-0.0039	(0.0136)	-0.0359*	(0.0205)

Panel D: CARs for Private Placements by Small and Medium Sized Enterprises (SMEs) with High vs. Low Growth Prospects								
	Overall (N = 933)		Low Growth (N = 335)		High Growth (N = 237)		Difference	
Window	CAR	Std error	CAR	Std error	CAR	Std error	CAR	Std error
- 1,+1	-0.0007	(0.0009)	0.0111	(0.0164)	-0.0019	(0.0022)	-0.0130	(0.0653)
- 5,+5	0.0018	(0.0021)	-0.0027	(0.0045)	0.0051	(0.0033)	0.0078	(0.0049)
- 1,0	0.0028	(0.0018)	0.0330	(0.0301)	0.0583***	(0.0166)	0.0253	(0.0217)
- 2,0	0.0038**	(0.0019)	0.0201	(0.0439)	0.1716***	(0.0354)	0.1515**	(0.0579)
- 10,0	0.0157***	(0.0057)	0.0021	(0.0043)	0.0047	(0.0029)	0.0026	(0.0026)
0,+1	-0.0036	(0.1154)	0.0003	(0.0006)	0.0095*	(0.0058)	0.0093*	(0.0048)
0,+2	-0.0010	(0.0035)	0.0075	(0.0283)	0.0255***	(0.0091)	0.0180**	(0.0087)

Table 3.8 - Cumulative Abnormal Returns (CARs) of Seasoned Equity Offereings (SEOs) via Private Placemetns (PPs) by Small and Medium Enterprises (SMEs) (cont.)

Panel E: CARs for Private Placements by Small and Medium Sized Enterprises (SMEs) with High vs. Low Underpricing								
	Overall (N = 933)		Low Underpricing (N = 262)		High Underpricing (N = 362)		Difference	
Window	CAR	Std error	CAR	Std error	CAR	Std error	CAR	Std error
- 1,+1	-0.0007	(0.0009)	-0.0108	(0.0128)	0.0146***	(0.0024)	0.0254**	(0.0117)
- 5,+5	0.0018	(0.0021)	-0.0158	(0.0269)	0.0200**	(0.0088)	0.0358*	(0.0204)
- 1,0	0.0028	(0.0018)	0.0065	(0.0057)	0.0378	(0.0536)	0.0313	(0.1432)
- 2,0	0.0038**	(0.0019)	0.0268	(0.0248)	0.1227	(0.1071)	0.0959	(0.4420)
- 10,0	0.0157***	(0.0057)	-0.0062	(0.0233)	0.0140***	(0.0043)	0.0202**	(0.0095)
0,+1	-0.0036	(0.1154)	-0.0132	(0.0147)	0.0238***	(0.0077)	0.0369***	(0.0120)
0,+2	-0.0010	(0.0035)	-0.0115	(0.0154)	0.0306**	(0.0117)	0.0421**	(0.0161)

Abnormal returns are computed by employing market models estimated from an estimation period prior to the issue date. The SEOs were conducted on either the Main Market or the Alternative Investment Market (AIM) of the London Stock Exchange from 1995 to 2015. SMEs refer to small and medium sized enterprises while Large to the rest. First SEO represents instances when a firm issued its first SEO and Follow-On SEOs to the later offerings. Overvalued and Undervalued represent upper and lower tercile firms respectively when ranked by misvalaution. Misvaluation for a firm is defined as its market value 30 days before the issue date less the fundamental value estimated from the latest financial statements available prior to the issue date, Fundamental values are themselves estimated from the valuation model specified by Rhodes-Kropf, Robinson and Vsiwanathan (2005). Low growth and High growth represent firms that had low or high growth prospects respectively, where growth values were estimated from the valuation model specified by Rhodes-Kropf, Robinson and Vsiwanathan (2005). High and Low Underpricing refer to measures of underpricing of the issue and is specified by Altinkilic and Hansen (2003) and compares the offer price to the market price after the issue date. Significance levels at the 1%, 5% and 10% levels are represented by ***, ** and * respectively, while standard errors are reported in parentheses.

difference between the two groups for this window is not significant.

Although it appears that the positive market reaction in the case of privately placed equity by SMEs on AIM is bigger compared to the case of MM listed SMEs, the difference between the abnormal returns observed is not statistically significant. The conclusions here are similar to the one made in Panel A of Table 3.6. For SMEs that issue their equity privately to institutional investors, being listed on either the main market (MM) or AIM does not make a statistically significant difference in the abnormal returns experienced up to the issue date.

In Panel B of Table 3.8 we report CARs for First versus Follow-on PPs by SMEs and the differences between these two groups. In the two-day period leading up to the equity issue [-2, 0] CARs for First time PPs are lower (9.20 percent) than CARs for Follow-on SEOs (11.19 per cent). Both results are statistically significant, at the 1% and 5% levels respectively, their difference though is insignificant. Around the event date both the individual returns and their differences are statistically insignificant. During the period up to two days after the issue date [0, +2], the abnormal returns for both first time placements and follow on placements, are positive but significant only for the first time placements subgroup (1.50 percent, significant at 5% level). We can conclude that, on average, the markets react more positively to Follow-on private placements than first time placements. However, the differences in abnormal returns between First time and Follow-on placements by SMEs are not anywhere significant. In Panel C of Table 3.8 we report CARs for overvalued versus undervalued PPs by SMEs and the differences between these two groups. In the run-up leading to the issue date [-2, 0] and [-1, 0], CARs for undervalued SEOs are significantly positive (16.20 percent and 9.34 percent,

respectively) and higher than the insignificantly negative CARs for overvalued SEOs (-5.02 percent and -3.30 percent, respectively). Both the individual CARs for the subgroup of undervalued PPs and the differences between overvalued and undervalued groups of PPs are statistically significant. In the five days around the issue date, while the CARs for undervalued PPs are slightly positive (1.03 percent) and insignificant we find that the CARs for overvalued SEOs are also positive (1.02 percent) and insignificant. Their difference is also statistically insignificant. Over the two-day post-issue period from the issue date [0, +2], the abnormal returns for overvalued firms is insignificantly negative (-0.39 percent) while for undervalued firms significantly positive (3.20 percent) and significantly higher than that for overvalued firms (at the 10% level). Based on our findings in this panel we can infer that in the case of SME PPs, markets react positively during the run-up period before the placement date, only for the group of undervalued firms. This conclusion is in line with those reached from Table 3.6 Panel C. The fact that one or more institutional investors are willing to buy the privately placed equity has a certification effect that sends a positive signal to the market about the quality of the issuing firm. This is especially so after the equity is placed, since there is a significant positive reaction for undervalued firms, when the "true" quality of the firm is revealed while, there is a negative reaction for overvalued firms.

Panel D of Table 3.8 shows CARs for SME PPs with high versus low growth prospects and the differences between these two groups. In the run up period [-1, 0] and [-2, 0], CARs for high growth SEOs are positive (5.83 percent and 17.16 percent respectively) and significant at the 1% level. Meanwhile, CARs for low growth SEOs are also positive (3.30 percent and 2.01 percent respectively) but insignificant. The difference between the two groups, though, is significant at the 5% level. Around the event date [-5, +5]

both the individual returns and their differences are statistically insignificant. Similarly, sub-sample CARs for the two groups of interest as well as their difference are statistically insignificant. Markets react positively when they expect that the issuing firm has high growth prospects and is able to place their equity privately with an institution. Following the placement, CAR results are significantly positive only for high growth SMEs.

In Panel E of Table 3.8 we report CARs for SMEs placing their equity privately with high underpricing versus low underpricing. In the ten-day period leading up to the equity issue [-10, 0] CARs for highly underpriced PPs are significantly positive and higher (1.40 percent) than the insignificantly negative CARs for PPs with low underpricing (-1.62 percent). The results for highly underpriced SEOs by SMEs are statistically significant at 1% level, and the difference between the abnormal returns results is significant at 5% level. In the days around the equity placement [-5, +5] there is a positive (2.00 per cent) market reaction, significant at the 1% level for highly underpriced SEOs, while firms with low levels of underpricing have negative and insignificant CARs (-1.58 percent). The difference between these two subgroups is statistically significant at 10% level. During the period up to two days after the issue date [0, +2], the abnormal returns for highly underpriced firms is positive (3.06 percent) and significant at 5% while for PPs with low underpricing are negative (-1.15 percent) but not significant. The difference in CARs between firms with high versus firms with low underpricing is significant at 5% level. Similarly to the finding in Table 3.6, we see that here too, in the case of SME PPs with high underpricing, the market reacts positively during the run-up period before the placement, only for the highly underpriced firms. For the case of low underpriced

placements by SMEs, the CARs are typically negative but not significant anywhere.[66]

3.4.4 Long-run performance

In this section we present Buy-and-hold abnormal returns (BHARs) results from the long-run performance analysis for specific groups of interest in our sample. The event windows presented in all our tables are one, two and three years before the equity is issued as well as one, two and three years after the issue. This way we are able to see market reaction and how much an investor could have gained in the pre-SEO period and in the aftermath of the deal. Table 3.9 reports the overall BHARs for the three main groups of interest: SMEs (Panel A), PPs (Panel B) and PPs by SMEs (Panel C). In Table 3.9, apart from the BHAR results, we report three different test-statistics: the t-statistic calculated assuming independence of the returns of the individual events, the t-statistic adjusted using the Andrade et al. (2001) methodology and the t-statistic calculated from the actual portfolio of returns. [67]

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66 The results reported in Tables 3.6, 3.7 and 3.8 have been repeated with the CARs are estimated from a market adjusted model, which is a special case of the market model, where the parameters are restricted to be $\alpha_i = 0$ and $\beta_i = 1$, rather than the estimated coefficients. The results when employing market adjusted models expected are reported in the Appendix to this chapter. While some of the results are changed, the signs on most of the relevant CARs are nearly always unchanged and the conclusions are mostly unchanged except for Panels relating to misvaluation and to growth prospects. In most such cases of differences, the root cause appears to be that a lower value of $\beta_i = 1$ is restrictively imposed in the market adjusted model when the true $\beta_i > 1$ (for example, small, high growth firms) or that a higher value of $\beta_i = 1$ is imposed when the true $\beta_i < 1$ (for example, larger firms that have fewer growth prospects).

67 More details about these statistics can be found in the methodology section of this chapter.

Table 3.9 – Buy-and-Hold-Abnormal-Returns (BHARs) Overall

Panel A: Buy and Hold Abnormal Returns (BHAR) for various horizons				
Overall: Small and Medium Sized Enterprises (N = 1069)				
Horizon (relative to Event date)	BHAR	t_ Independence	t_ Adjusted	t_Portfolio
3 Years Pre	0.2790***	(4.1779)	(1.4965)	(1.6683)
2 Years Pre	0.3148***	(5.7728)	(2.0677)	(2.3051)
1 Year Pre	0.2044***	(5.3022)	(1.8991)	(2.1172)
1 Year Post	-0.0731*	(1.8955)	(0.6789)	(0.7569)
2 Years Post	-0.1734***	(3.1807)	(1.1393)	(1.2701)
3 Years Post	-0.2290***	(3.4295)	(1.2284)	(1.3694)

Panel B: Buy and Hold Abnormal Returns (BHAR) for various horizons				
Overall: Private Placements (N = 1115)				
Horizon (relative to Event date)	BHAR	t_ Independence	t_ Adjusted	t_Portfolio
3 Years Pre	0.4274***	(6.9338)	(2.2830)	(2.3831)
2 Years Pre	0.3888***	(7.7258)	(2.5438)	(2.6553)
1 Year Pre	0.2290***	(6.4342)	(2.1185)	(2.2114)
1 Year Post	-0.0580	(1.6286)	(0.5362)	(0.5597)
2 Years Post	-0.1597***	(3.1727)	(1.0446)	(1.0904)
3 Years Post	-0.2108***	(3.4204)	(1.1262)	(1.1756)

Panel C: Buy and Hold Abnormal Returns (BHAR) for various horizons				
Overall: Private Placements by Small and Medium Sized Enterprises (N = 728)				
Horizon (relative to Event date)	BHAR	t_ Independence	t_ Adjusted	t_Portfolio
3 Years Pre	0.4186***	(4.7937)	(1.7024)	(1.9708)
2 Years Pre	0.4171***	(5.8500)	(2.0775)	(2.4051)
1 Year Pre	0.2497***	(4.9536)	(1.7592)	(2.0366)
1 Year Post	-0.0718	(1.4252)	(0.5061)	(0.5860)
2 Years Post	-0.1899***	(2.6639)	(0.9460)	(1.0952)
3 Years Post	-0.2627***	(3.0081)	(1.0683)	(1.2368)

Buy and Hold Abnormal Returns (BHAR) employ the market adjusted model to estimate the expected returns: $BHAR_i = \prod_{t=1}^{T}(1 + R_{i,t}) - \prod_{t=1}^{T}(1 + R_{m,t})$, where the $R_{i,t}$ and $R_{m,t}$ are daily returns of event (i.e. deal) i and the market respectively, on day t and T is the appropriate holding horizon. The SEOs were conducted on either the Main Market or the Alternative Investment Market (AIM) of the London Stock Exchange from 1995 to 2015. SMEs refer to small and medium sized enterprises. Significance levels at the 1%, 5% and 10% levels are represented by ***, ** and * respectively, while standard errors are reported in parentheses.

Panel A has the BHARs for SMEs issuing equity. We see that the abnormal returns up to three years before the issue were positive and statistically significant (at 1% level). More specifically, BHARs were 20.44, 31.48 and 27.90 per cent for one, two and three years respectively. However, in the after math of the deal the picture is reversed. BHARs are negative for one (-7.31 per cent, significant at 10% level), two (-17.34 per cent, significant at 1% level) and three (-22.90 per cent, significant at 1% level) years after the SEOs. In Panel B we report BHARs for PPs. As in Panel B, BHARs up to three years pre-SEOs are positive and significant at 1%. One, two and three- year BHARs are 22.90, 38.88 and 42.74 per cent respectively. Performance results become negative post-SEO. The BHARs for one year after the issue are negative (-5.80 per cent) but statistically insignificant. Two and three-year BHARs are -15.97 and -21.08 per cent respectively and significant at 1% level. In Panel C, we see long-run performance results for PPs conducted by SMEs. Similarly to before, BHARs in the pre-SEO period are positive for one (24.97 per cent), two (41.71 per cent) and three (41.86 per cent) years before the equity issuance. BHARs results in the pre-SEO period are all statistically significant at 1% level. Underperformance is observed after the issue for SMEs placing their equity privately. One year after the event, BHARs are negative (-7.18 per cent) but insignificant. For two and three years after the placement the performance is negative and significant at 1% level (-18.99 and -26.27 per cent for two and three years respectively).

Results reported here for the long-term performance in the aftermath of the deals are in line with previous studies and long-run underperformance after SEOs has been well documented in previous literature.[68] The t-statistic used in this table to determine the

[68] For a collection of studies see section 3.2.2 of this chapter.

significance of the BHARs in the t-statistic assuming independence[69]. By using this t-statistic we replicate the results of some previous studies concerning long-run underperformance after the SEO. Using the other two t-statistics, though, leads to BHAR results that are insignificant in the post-SEO window. This finding underlines the importance of cross-correlations when computing the t-statistics employed in empirical analysis. Failure to adjust for cross-correlation[70] will lead to over rejection of the null.

In Table 3.10 we report BHAR results for SMEs. Different subgroups of SMEs are presented in the panels of Table 3.10. Panel A presents results of SMEs listed on MM and AIM and their difference in terms of BHARs. Panel B focuses on the long-run performance differences between First and Follow-on SEOs. In Panels C, D and E misvaluation, growth prospects and underpricing components come into play. In Panel C we report the BHAR differences between overvalued and undervalued SMEs. Panel D has the performance differences between SMEs with high growth prospects versus SMEs with low growth prospects. Finally, Panel E of Table 3.10 reports the BHARs of SMEs with high versus low underpricing.

In the first two columns of Panel A we have the overall SMEs BHARs for the sample period we examine. The test-statistic used in this table to report significance of results is the adjusted using Andrade et al. (2001) methodology t-statistic. In the run-up until the issue date, SME firms have positive BHARs. The results, however, are significant only for the windows of one year and two years pre-SEO. One year before the deal BHARs are positive (20.44 per cent) and significant at 10% level. Two years BHARs are also positive (31.48 per cent) and significant at 5% level. It is worth noting here is that all the

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69 The t-statistics based on which significance at 10%, 5% and 1% level is determined, as showed by the asterisks next to the BHAR results (*, **, ***).

70 Which is what we conjecture has happened in some of the previous SEO studies.

Table 3.10 - Buy-and-Hold-Abnormal-Returns (BHARs) of SMEs

Panel A: BHARs of various horizons for Small and Medium Sized Enterprises (SMEs) on the Main Market (MM) and Alternative Investment Market (AIM)								
	Overall (N = 1069)		AIM (N = 855)		Main Market (N = 214)		Difference	
Horizon (relative to Event date)	BHAR	t_ Adjusted	BHAR	t_ Adjusted	BHAR	t_ Adjusted	BHAR	t_ Adjusted
3 Years Pre	0.2790	(1.4965)	0.2509	(1.4507)	0.3912	(1.1039)	-0.1402***	(3.2534)
2 Years Pre	0.3148**	(2.0677)	0.2992**	(2.1186)	0.3769	(1.3027)	-0.0777**	(1.9944)
1 Year Pre	0.2044*	(1.8991)	0.2141**	(2.1439)	0.1657	(0.8102)	0.0484	(1.4762)
1 Year Post	-0.0731	(0.6789)	-0.0816	(0.8175)	-0.0389	(0.1899)	-0.0428	(1.3064)
2 Years Post	-0.1734	(1.1393)	-0.1783	(1.2626)	-0.1539	(0.5320)	-0.0244	(0.6264)
3 Years Post	-0.2290	(1.2284)	-0.2343	(1.3544)	-0.2080	(0.5871)	-0.0262	(0.6089)

Panel B: BHARs of various horizons for Small and Medium Sized Enterprises (SMEs) in First and Follow-On SEOs								
	Overall (N = 1069)		First SEO (N = 81)		Follow On SEOs (N = 988)		Difference	
Horizon (relative to Event date)	BHAR	t_ Adjusted	BHAR	t_ Adjusted	BHAR	t_ Adjusted	BHAR	t_ Adjusted
3 Years Pre	0.2790	(1.4965)	0.5179	(1.2014)	0.2594	(1.5171)	0.2585***	(5.3625)
2 Years Pre	0.3148**	(2.0677)	0.5824*	(1.6548)	0.2928**	(2.0972)	0.2896***	(7.3590)
1 Year Pre	0.2044*	(1.8991)	0.5477**	(2.2006)	0.1763*	(1.7856)	0.3714***	(13.3449)
1 Year Post	-0.0731	(0.6789)	-0.0784	(0.3149)	-0.0726	(0.7358)	-0.0057	(0.2057)
2 Years Post	-0.1734	(1.1393)	-0.2069	(0.5879)	-0.1707	(1.2225)	-0.0362	(0.9205)
3 Years Post	-0.2290	(1.2284)	-0.3946	(0.9154)	-0.2154	(1.2599)	-0.1791***	(3.7164)

Table 3.10 – Buy-and Hold-Abnormal-Returns (BHARs) of SMEs (cont.)

Panel C: BHARs of various horizons for by Small and Medium Sized Enterprises (SMEs) that are Overvalued vs. Undervalued								
	Overall (N = 1069)		Overvalued Tercile (N = 260)		Undervalued Tercile (N = 445)		Difference	
Horizon (relative to Event date)	BHAR	t_ Adjusted	BHAR	t_ Adjusted	BHAR	t_ Adjusted	BHAR	t_ Adjusted
3 Years Pre	0.2790	(1.4965)	1.0887*	(1.6690)	-0.2170	(0.9349)	1.3056***	(23.7180)
2 Years Pre	0.3148**	(2.0677)	1.0823**	(2.0321)	-0.1125	(0.5939)	1.1948***	(24.0205)
1 Year Pre	0.2044*	(1.8991)	0.6757*	(1.7942)	-0.0238	(0.1779)	0.6996***	(16.7245)
1 Year Post	-0.0731	(0.6789)	-0.1862	(0.4943)	0.0085	(0.0635)	-0.1947***	(4.6539)
2 Years Post	-0.1734	(1.1393)	-0.3743	(0.7027)	-0.0065	(0.0344)	-0.3678***	(7.3933)
3 Years Post	-0.2290	(1.2284)	-0.4703	(0.7209)	0.0103	(0.0445)	-0.4806***	(8.7304)

Panel D: BHARs of various horizons for SEOs by Small and Medium Sized Enterprises (SMEs) with High vs. Low Growth Prospects								
	Overall (N = 1069)		High Growth Tercile (N = 365)		Low Growth Tercile (N = 295)		Difference	
Horizon (relative to Event date)	BHAR	t_ Adjusted	BHAR	t_ Adjusted	BHAR	t_ Adjusted	BHAR	t_ Adjusted
3 Years Pre	0.2790	(1.4965)	0.4996	(1.1906)	0.1003	(0.6260)	0.3993***	(9.7062)
2 Years Pre	0.3148**	(2.0677)	0.5382	(1.5707)	0.0743	(0.5681)	0.4639***	(12.4777)
1 Year Pre	0.2044*	(1.8991)	0.3371	(1.3916)	0.0373	(0.4032)	0.2998***	(9.5914)
1 Year Post	-0.0731	(0.6789)	-0.0215	(0.0887)	-0.0251	(0.2718)	0.0036	(0.1166)
2 Years Post	-0.1734	(1.1393)	-0.1216	(0.3548)	-0.1061	(0.8112)	-0.0155	(0.4164)
3 Years Post	-0.2290	(1.2284)	-0.1611	(0.3838)	-0.2118	(1.3220)	0.0507	(1.2321)

Table 3.10 – Buy-and-Hold-Abnormal-Returns (BHARs) of SMEs (cont.)

Panel E: BHARs of various horizons for SEOs by Small and Medium Sized Enterprises (SMEs) with High vs. Low Underpricing								
	Overall (N = 1069)		High Underpricing Tercile (N = 244)		Low Underpricing Tercile (N = 441)		Difference	
Horizon (relative to Event date)	BHAR	t_Adjusted	BHAR	t_Adjusted	BHAR	t_Adjusted	BHAR	t_Adjusted
3 Years Pre	0.2790	(1.4965)	0.3003	(0.8942)	0.0583	(0.4402)	0.2420***	(5.9096)
2 Years Pre	0.3148**	(2.0677)	0.3403	(1.2411)	0.1633	(1.5103)	0.1769***	(4.7823)
1 Year Pre	0.2044*	(1.8991)	0.2435	(1.2559)	0.0085	(0.1115)	0.2350***	(7.5520)
1 Year Post	-0.0731	(0.6789)	-0.1319	(0.6804)	-0.0370	(0.4837)	-0.0949***	(3.0510)
2 Years Post	-0.1734	(1.1393)	-0.2957	(1.0785)	-0.1381	(1.2766)	-0.1576***	(4.2608)
3 Years Post	-0.2290	(1.2284)	-0.4291	(1.2779)	-0.1109	(0.8371)	-0.3183***	(7.7726)

Buy and Hold Abnormal Returns (BHAR) employ the market adjusted model to estimate the expected returns: $BHAR_i = \prod_{t=1}^{T}(1 + R_{i,t}) - \prod_{t=1}^{T}(1 + R_{m,t})$, where the $R_{i,t}$ and $R_{m,t}$ are daily returns of event (i.e. deal) i and the market respectively, on day t and T is the appropriate holding horizon. The SEOs were conducted on either the Main Market or the Alternative Investment Market (AIM) of the London Stock Exchange from 1995 to 2015. SMEs refer to small and medium sized enterprises while Large to the rest. First SEO represents instances when a firm issued its first SEO and Follow-On SEOs to the later offerings. Overvalued and Undervalued represent upper and lower tercile firms respectively when ranked by misvalaution. Misvaluation for a firm is defined as its market value 30 days before the issue date less the fundamental value estimated from the latest financial statements available prior to the issue date, Fundamental values are themselves estimated from the valuation model specified by Rhodes-Kropf, Robinson and Vsiwanathan (2005). Low growth and High growth represent firms that had low or high growth prospects respectively, where growth values were estimated from the valuation model specified by Rhodes-Kropf, Robinson and Vsiwanathan (2005). High and Low Underpricing refer to measures of underpricing of the issue and is specified by Altinkilic and Hansen (2003) and compares the offer price to the market price after the issue date. Significance levels at the 1%, 5% and 10% levels are represented by ***, ** and * respectively, while standard errors are reported in parentheses.

BHARs for the one, two and three-year windows after the deal are negative but statistically insignificant.

The rest of the table is focusing on the performance of SMEs listed in different markets (MM versus AIM). For the 3-year pre-SEO window we see that both MM and AIM SMEs have positive but insignificant BHARs. BHARs for MM firms are higher (39.12 per cent) than those of AIM (25.09 per cent) and the difference between the two is statistically significant. Two-year pre-SEO BHARs are positive and significant for AIM SMEs (29.92 per cent) and positive but insignificant (37.69 per cent) for MM SMEs. The difference between these two is found significant at 5% level. One year before the SEO BHARs were positive and significant at 5% level for AIM firms (21.41 per cent). MM BHARs as well as the difference between AIM and MM markets are insignificant. All the BHARs for one, two and three years after the SEO are negative and insignificant. The differences between AIM and MM are also insignificant.

In Panel B of Table 3.10 we report BHARs for First versus Follow-on SEOs by SMEs and the differences between these two groups. First time SEOs have higher BHARs than Follow-on SEOs for all the windows before the SEO. One-year pre-SEO BHARs are 54.77 per cent (significant at 5% level), while Follow-on BHARs, for the same window, are 17.93 per cent (significant at 10% level). The difference between the two is also statistically significant. Similarly, two-year BHARs are higher for the First time SEOs (58.24 per cent) and significant at 10% level. BHARs for Follow-on SEOs are 29.8 per cent (significant at 5% level). The difference between the two is also significant. For the three-year Pre-SEO window, results of individual groups BHARs are insignificant but the difference between the two is significant. For the post-SEO windows, which are of

interest in our study, all BHARs for all three windows are negative and insignificant. Three years after SEO took place, BHARs are -39.46 per cent for First time SEOs and -21.54 per cent for Follow-on deals. Although individually results are not significant, the difference between the two subgroups (First time versus Follow-on deals) for this window is significant.

In Panel C of Table 3.10 we report BHARs for overvalued versus undervalued SEOs by SMEs and the differences between these two groups. In this panel we see some interesting patterns. In the period before the SEO, BHARs are all significantly positive for overvalued firms. At the same time returns for undervalued firms in the pre-SEO period are negative and insignificant. The differences in BHARs between the two groups are highly statistically significant (1%). After the SEO takes place, BHARs for firms belonging to the high overvaluation tercile group become negative and insignificant. At the same time, BHARs for undervalued firms become almost zero and insignificant. The differences between these two groups are significant at 1% level. These results provide an indication of how market reacts in the long-run when over- and under-valued firms raise equity. Before the issue overvalued firms are perceived by the market as good quality firms with potentially promising returns. The opposite applies for the undervalued firms. During the three years after the SEO though, it seems there is a "correction" in the market reactions about firms belonging into these two groups.

Panel D of Table 3.10 shows BHARs for SME SEOs with high versus low growth prospects and the differences between these two groups. Based in findings in this table, we see that all BHAR results (pre- and post-SEO) are statistically insignificant. In the windows up to three years before the SEO firms belonging to both the high and low

growth groups have positive (although insignificant results). High growth companies have higher BHARs than low growth ones, with the difference between these two groups to be significant at 1% level. In the aftermath of the SEO, both subgroups have negative and insignificant returns. The difference in the BHARs between the two groups is also insignificant,

In Panel E of Table 3.10 we report BHARs for SMEs issuing equity with high underpricing versus low underpricing. In this table we can see some interesting results. Both subsamples (high versus low underpricing firms) have positive and insignificant BHARs in the pre-SEO window and negative and insignificant BHARs post-SEO. The firms with high levels of underpricing seem to earn more before the SEO and lose more after the SEO, compared to the low underpricing firms. The BHARs differences between the two groups for all windows are highly significant (1%).

In Table 3.11 we focus on different subgroups of PPs. Panel A presents results of PPs conducted by large firms versus SMEs and their difference in terms of BHARs. Panel B has BHAR results for PP of firms listed on MM versus AIM, while Panel C reports BHARs for First versus Follow-on PPs. In Panels D, E and F there are differences in long-term performance between overvalued versus undervalued PPs, PPs with high growth prospects versus PPs with low growth prospects and PPs with high versus low underpricing, respectively.

Panel A of Table 3.11 has results for the overall group of PPs as well as large versus SME firms subgroups. Overall, PP firms have positive and significant (at 5% level) returns in the years before the placement. More specifically, BHARs are 22.90, 38.88 and 42.74 per cent one, two and three years before the equity placement. After the event, returns

Table 3.11 – Buy-and-Hold-Abnormal-Returns (BHARs) of PPs

Panel A: BHARs of various horizons for Private Placements by Small and Medium Sized Enterprises (SMEs) and Large firms								
	Overall (N = 1115)		SMEs (N = 728)		Large firms (N = 387)		Difference	
Horizon (relative to Event date)	BHAR	t_ Adjusted	BHAR	t_ Adjusted	BHAR	t_ Adjusted	BHAR	t_ Adjusted
3 Years Pre	0.4274**	(2.2830)	0.4186*	(1.7024)	0.4439***	(3.3697)	-0.0253	(0.9726)
2 Years Pre	0.3888**	(2.5438)	0.4171**	(2.0775)	0.3356***	(3.1202)	0.0815***	(3.4620)
1 Year Pre	0.2290**	(2.1185)	0.2497*	(1.7592)	0.1899**	(2.4968)	0.0598***	(3.0237)
1 Year Post	-0.0580	(0.5362)	-0.0718	(0.5061)	-0.0318	(0.4183)	-0.0400**	(2.0233)
2 Years Post	-0.1597	(1.0446)	-0.1899	(0.9460)	-0.1027	(0.9552)	-0.0872***	(3.7053)
3 Years Post	-0.2108	(1.1262)	-0.2627	(1.0683)	-0.1133	(0.8599)	-0.1494***	(5.7365)
Panel B: BHARs of various horizons for Private Placements on the Main Market (MM) and Alternative Investment Market (AIM)								
	Overall (N = 1115)		AIM (N = 744)		Main Market (N = 371)		Difference	
Horizon (relative to Event date)	BHAR	t_ Adjusted	BHAR	t_ Adjusted	BHAR	t_ Adjusted	BHAR	t_ Adjusted
3 Years Pre	0.4274**	(2.2830)	0.3933**	(1.9763)	0.4956**	(2.0248)	-0.1023***	(3.3593)
2 Years Pre	0.3888**	(2.5438)	0.3879**	(2.3870)	0.3906*	(1.9545)	-0.0028	(0.1001)
1 Year Pre	0.2290**	(2.1185)	0.2442**	(2.1253)	0.1984	(1.4038)	0.0458**	(1.9799)
1 Year Post	-0.0580	(0.5362)	-0.0772	(0.6720)	-0.0193	(0.1367)	-0.0579**	(2.5024)
2 Years Post	-0.1597	(1.0446)	-0.1776	(1.0929)	-0.1237	(0.6190)	-0.0539*	(1.9577)
3 Years Post	-0.2108	(1.1262)	-0.2296	(1.1535)	-0.1732	(0.7075)	-0.0564*	(1.8515)

Table 3.11 – Buy-and-Hold-Abnormal-Returns (BHARs) of PPs (cont.)

Panel C: BHARs of various horizons for Private Placements in First and Follow-On SEOs								
	Overall (N = 1115)		First SEO (N = 155)		Follow On SEOs (N = 960)		Difference	
Horizon (relative to Event date)	BHAR	t_ Adjusted	BHAR	t_ Adjusted	BHAR	t_ Adjusted	BHAR	t_ Adjusted
3 Years Pre	0.4274**	(2.2830)	0.3468	(1.5614)	0.4404**	(2.4294)	-0.0936**	(2.3250)
2 Years Pre	0.3888**	(2.5438)	0.3388*	(1.8683)	0.3969***	(2.6815)	-0.0581	(1.5973)
1 Year Pre	0.2290**	(2.1185)	0.3340**	(2.6048)	0.2120**	(2.0258)	0.1220***	(3.9860)
1 Year Post	-0.0580	(0.5362)	-0.0566	(0.4413)	-0.0582	(0.5559)	0.0016	(0.0519)
2 Years Post	-0.1597	(1.0446)	-0.1844	(1.0167)	-0.1557	(1.0518)	-0.0287	(0.7881)
3 Years Post	-0.2108	(1.1262)	-0.2976	(1.3401)	-0.1968	(1.0857)	-0.1008**	(2.5029)
Panel D: BHARs of various horizons for Private Placement that are Overvalued vs. Undervalued								
	Overall (N = 1115)		Overvalued Tercile (N = 302)		Undervalued Tercile (N = 408)		Difference	
Horizon (relative to Event date)	BHAR	t_ Adjusted	BHAR	t_ Adjusted	BHAR	t_ Adjusted	BHAR	t_ Adjusted
3 Years Pre	0.4274**	(2.2830)	1.0840**	(2.2714)	-0.0797	(0.4393)	1.1637***	(25.8595)
2 Years Pre	0.3888**	(2.5438)	0.9690**	(2.4868)	-0.0447	(0.3019)	1.0138***	(24.9308)
1 Year Pre	0.2290**	(2.1185)	0.5758**	(2.0899)	-0.0205	(0.1954)	0.5963***	(17.4389)
1 Year Post	-0.0580	(0.5362)	-0.1193	(0.4328)	0.0151	(0.1443)	-0.1344***	(3.9299)
2 Years Post	-0.1597	(1.0446)	-0.2424	(0.6220)	-0.0258	(0.1738)	-0.2166***	(5.3272)
3 Years Post	-0.2108	(1.1262)	-0.3462	(0.7254)	-0.0165	(0.0908)	-0.3297***	(7.3269)

Table 3.11 – Buy-and-Hold-Abnormal-Returns (BHARs) of PPs (cont.)

Panel E: BHARs of various horizons for Private Placements with High vs. Low Growth Prospects								
	Overall (N = 1115)		High Growth Tercile (N = 311)		Low Growth Tercile (N = 386)		Difference	
Horizon (relative to Event date)	BHAR	t_Adjusted	BHAR	t_Adjusted	BHAR	t_Adjusted	BHAR	t_Adjusted
3 Years Pre	0.4274**	(2.2830)	0.6000	(1.3526)	0.2259*	(1.8868)	0.3742***	(8.9789)
2 Years Pre	0.3888**	(2.5438)	0.5900	(1.6288)	0.1281	(1.3105)	0.4619***	(12.2660)
1 Year Pre	0.2290**	(2.1185)	0.3371	(1.3161)	0.0770	(1.1142)	0.2601***	(8.2138)
1 Year Post	-0.0580	(0.5362)	0.0300	(0.1173)	-0.0285	(0.4119)	0.0585*	(1.8479)
2 Years Post	-0.1597	(1.0446)	-0.0918	(0.2534)	-0.1020	(1.0438)	0.0102	(0.2716)
3 Years Post	-0.2108	(1.1262)	-0.1703	(0.3840)	-0.1767	(1.4760)	0.0064	(0.1524)
Panel F: BHARs of various horizons for Private Placements with High vs. Low Underpricing								
	Overall (N = 1115)		High Underpricing Tercile (N = 213)		Low Underpricing Tercile (N = 467)		Difference	
Horizon (relative to Event date)	BHAR	t_Adjusted	BHAR	t_Adjusted	BHAR	t_Adjusted	BHAR	t_Adjusted
3 Years Pre	0.4274**	(2.2830)	0.5075	(1.5255)	0.3187**	(2.3601)	0.1889***	(4.3894)
2 Years Pre	0.3888**	(2.5438)	0.5133*	(1.8898)	0.3062***	(2.7778)	0.2071***	(5.3272)
1 Year Pre	0.2290**	(2.1185)	0.2722	(1.4169)	0.0962	(1.2339)	0.1760***	(5.3826)
1 Year Post	-0.0580	(0.5362)	-0.1541	(0.8021)	-0.0095	(0.1221)	-0.1445***	(4.4215)
2 Years Post	-0.1597	(1.0446)	-0.3656	(1.3457)	-0.0909	(0.8249)	-0.2746***	(7.0636)
3 Years Post	-0.2108	(1.1262)	-0.5243	(1.5759)	-0.0778	(0.5762)	-0.4465***	(10.3774)

Buy and Hold Abnormal Returns (BHAR) employ the market adjusted model to estimate the expected returns: $BHAR_i = \prod_{t=1}^{T}(1 + R_{i,t}) - \prod_{t=1}^{T}(1 + R_{m,t})$, where the $R_{i,t}$ and $R_{m,t}$ are daily returns of event (i.e. deal) i and the market respectively, on day t and T is the appropriate holding horizon. The SEOs were conducted on either the Main Market or the Alternative Investment Market (AIM) of the London Stock Exchange from 1995 to 2015. SMEs refer to small and medium sized enterprises while Large to the rest. First SEO represents instances when a firm issued its first SEO and Follow-On SEOs to the later offerings. Overvalued and Undervalued represent upper and lower tercile firms respectively when ranked by misvalaution. Misvaluation for a firm is defined as its market value 30 days before the issue date less the fundamental value estimated from the latest financial statements available prior to the issue date, Fundamental values are themselves estimated from the valuation model specified by Rhodes-Kropf, Robinson and Vsiwanathan (2005). Low growth and High growth represent firms that had low or high growth prospects respectively, where growth values were estimated from the valuation model specified by Rhodes-Kropf, Robinson and Vsiwanathan (2005). High and Low Underpricing refer to measures of underpricing of the issue and is specified by Altinkilic and Hansen (2003) and compares the offer price to the market price after the issue date. Significance levels at the 1%, 5% and 10% levels are represented by ***, ** and * respectively, while standard errors are reported in parentheses.

become negative (and smaller in magnitude in absolute terms) and insignificant. Turning to the PPs done by large firms versus SMEs, we see some similar BHARs patterns to the tables discussed above. More specifically, both large firms as well as SME have positive and significant BHARs in all the windows before the placement and negative and insignificant results afterwards. On average SMEs have higher returns before the placement compared to larger firms. At the same time, SMEs underperform more the larger firms in the post-PP period. Although individual BHARs are insignificant for the post-placement period, the differences between the two groups of interest in this panel are significant at least at 5% level.

In Panel B of Table 3.11, we focus on the performance of PPs from firms listed on different markets (MM versus AIM). Both AIM and MM firms have on average positive and, in most cases, significant BHARs in all windows before the placement and negative and insignificant BHARs in the three windows after the event. One year before the equity issue, AIM firms appear to outperform the MM ones, with the difference in returns to be significant at 5% level. Two and three years before the PP event, MM outperform AIM market, with the difference in the 3-year windows being significant at 1%. After PPs take place, AIM firms underperform more compared to MM firms. The differences between the two subgroups are significant in all post-PP windows.

Panel C of Table 3.11 has BHARs results for First versus Follow-on PPs and the differences between these two groups. The patterns in results here are very similar to what we have seen in previous tables. In all the pre-issue windows both groups have positive and, on average, significant BHARs. Post-issue, both groups underperform. Attention is needed, however, in making any conclusions in this particular case, since it

is likely that our deal grouping creates some contamination in the data. This is an concern in most studies of long-run performance. In our case, the issue comes in the follow-on subgroup. It is not clear whether the post-issue long term returns of an early issue are contaminated by the effect of a subsequent follow-on issue by the same firm. This potential overlap creates problems with correlation in returns. Part of the correlation problem in returns is dealt with the via the adjustment factor in the computation of the test statistic. Nevertheless, caution will need to be exercised in making reliable conclusions about the returns and their significance in the case of the follow-on group.

In Panel D of Table 3.11 we report BHARs for overvalued versus undervalued cases of PPs and the differences between these two groups. Overvalued firms have positive and significant returns in the up to 3 years windows we examine. After the PP, though, the returns become negative and insignificant. In the case of undervalued firms placing their equity privately, results are insignificant for both the pre- and post-PP periods. Interestingly enough, the BHARs differences between the two groups are significant for all windows. What these results indicate is that the BHARs of undervalued firms are not different than zero both before and after the event.

Panel E of Table 3.11 shows BHARs for PPs of firms with high versus low growth prospects and the differences between these two groups. The majority of the results here, both pre- and post-PP are not statistically significant. The return differences between the two groups in the pre-PP period are significant, indicating that before the deal the BHARs for high growth firms is higher compared to low growth firms. However, we should also keep in mind that individual returns are for our subgroups are not

significant.

In Panel F of Table 3.11 we report BHARs for PPs with high underpricing versus low underpricing. For firms placing their equity with high levels of underpricing BHARs, for both pre- and post-event windows, are not significant. The only exception is the BHARs for the 2-year period before the PP which is 51.33 per cent and significant at 10%). For low-underpricing firms there are positive and significant BHARs for the 2 and 3-year windows before the event. The rest of BHARs results for this group are not significant. However, the differences in BHARs between the two groups of interest for this panel are significant at 1% level.

In Table 3.12 we focus on Private placements done by SMEs. Different subgroups of SME PPs are presented in the panels of Table 3.12. Panel A has BHAR results for SME PPs of firms listed on MM versus AIM, while Panel B reports BHARs for First versus Follow-on PPs by SMEs. In Panels C, D and E there are long-run return differences between overvalued versus undervalued PPs conducted by SMEs, PPs with high growth prospects versus PPs with low growth prospects and SME PPs with high versus low underpricing, respectively.

In the first two columns of Panel A we have the overall SME PPs BHARs for the sample period we examine. Prior to the issue, SMEs placing their equity privately have positive and significant BHARs. One, two and three years prior to the event BHARs are 24.97, 41.71 and 41.86 per cent respectively. Results are significant at least at 10% level. After PP, BHARs become negative and insignificant. Focusing on the performance of SMEs listed in different markets (MM versus AIM) that issue their equity privately we see that pre-PP BHARs are significantly positive for AIM listed SMEs. In the aftermath of the

Table 3.12 – Buy-and-Hold-Abnormal-Returns (BHARs) of SMEs PPs

Panel A: BHARs of various horizons for Private Placements by Small and Medium Sized Enterprises (SMEs) on the Main Market (MM) and Alternative Investment Marke								
	Overall (N = 728)		AIM (N = 579)		Main Market (N = 149)		Difference	
Horizon (relative to Event date)	BHAR	t_ Adjusted	BHAR	t_ Adjusted	BHAR	t_ Adjusted	BHAR	t_ Adjusted
3 Years Pre	0.4186*	(1.7024)	0.4234*	(1.8677)	0.3999	(0.8427)	0.0235	(0.3925)
2 Years Pre	0.4171**	(2.0775)	0.4294**	(2.3201)	0.3691	(0.9526)	0.0603	(1.1159)
1 Year Pre	0.2497*	(1.7592)	0.2739**	(2.0925)	0.1560	(0.5693)	0.1179**	(2.5940)
1 Year Post	-0.0718	(0.5061)	-0.0750	(0.5730)	-0.0596	(0.2176)	-0.0154	(0.3382)
2 Years Post	-0.1899	(0.9460)	-0.1833	(0.9905)	-0.2156	(0.5563)	0.0322	(0.5963)
3 Years Post	-0.2627	(1.0683)	-0.2507	(1.1059)	-0.3092	(0.6516)	0.0585	(0.9786)

Panel B: BHARs of various horizons for Private Placements by Small and Medium Sized Enterprises (SMEs) in First and Follow-On SEOs								
	Overall (N = 728)		First SEO (N = 68)		Follow On SEOs (N = 660)		Difference	
Horizon (relative to Event date)	BHAR	t_ Adjusted	BHAR	t_ Adjusted	BHAR	t_ Adjusted	BHAR	t_ Adjusted
3 Years Pre	0.4186*	(1.7024)	0.5025	(1.0827)	0.4099*	(1.7980)	0.0926	(1.6249)
2 Years Pre	0.4171**	(2.0775)	0.5327	(1.4057)	0.4052**	(2.1765)	0.1275***	(2.7411)
1 Year Pre	0.2497*	(1.7592)	0.5646**	(2.1072)	0.2173*	(1.6507)	0.3474***	(10.5591)
1 Year Post	-0.0718	(0.5061)	-0.0363	(0.1356)	-0.0755	(0.5736)	0.0392	(1.1905)
2 Years Post	-0.1899	(0.9460)	-0.2037	(0.5376)	-0.1885	(1.0126)	-0.0152	(0.3271)
3 Years Post	-0.2627	(1.0683)	-0.4278	(0.9218)	-0.2457	(1.0775)	-0.1822***	(3.1972)

Table 3.12 – Buy-and-Hold-Abnormal-Returns (BHARs) of SMEs PPs (cont.)

Panel C: BHARs of various horizons for Private Placements by Small and Medium Sized Enterprises (SMEs) that are Overvalued vs. Undervalued								
	Overall (N = 728)		Overvalued Tercile (N = 180)		Undervalued Tercile (N = 310)		Difference	
Horizon (relative to Event date)	BHAR	t_ Adjusted	BHAR	t_ Adjusted	BHAR	t_ Adjusted	BHAR	t_ Adjusted
3 Years Pre	0.4186*	(1.7024)	1.2333*	(1.7947)	-0.1024	(0.4640)	1.3358***	(19.8467)
2 Years Pre	0.4171**	(2.0775)	1.2108**	(2.1579)	-0.0406	(0.2254)	1.2514***	(20.5768)
1 Year Pre	0.2497*	(1.7592)	0.7082*	(1.7849)	-0.0006	(0.0045)	0.7088***	(13.8590)
1 Year Post	-0.0718	(0.5061)	-0.1749	(0.4407)	0.0272	(0.2135)	-0.2021***	(3.9513)
2 Years Post	-0.1899	(0.9460)	-0.3662	(0.6527)	-0.0066	(0.0364)	-0.3597***	(5.9141)
3 Years Post	-0.2627	(1.0683)	-0.4925	(0.7166)	0.0280	(0.1270)	-0.5205***	(7.7339)
Panel D: BHARs of various horizons for Private Placements by Small and Medium Sized Enterprises (SMEs) with High vs. Low Growth Prospects								
	Overall (N = 728)		High Growth Tercile (N = 261)		Low Growth Tercile (N = 182)		Difference	
Horizon (relative to Event date)	BHAR	t_ Adjusted	BHAR	t_ Adjusted	BHAR	t_ Adjusted	BHAR	t_ Adjusted
3 Years Pre	0.4186*	(1.7024)	0.6349	(1.2732)	0.1844	(0.6888)	0.4505***	(7.7470)
2 Years Pre	0.4171**	(2.0775)	0.6347	(1.5590)	0.0928	(0.4246)	0.5419***	(10.3132)
1 Year Pre	0.2497*	(1.7592)	0.3678	(1.2774)	0.0805	(0.5206)	0.2873***	(6.5021)
1 Year Post	-0.0718	(0.5061)	0.0492	(0.1708)	-0.0780	(0.5049)	0.1272***	(2.8788)
2 Years Post	-0.1899	(0.9460)	-0.0745	(0.1829)	-0.1985	(0.9083)	0.1241**	(2.3612)
3 Years Post	-0.2627	(1.0683)	-0.1473	(0.2955)	-0.3283	(1.2264)	0.1810***	(3.1126)

Table 3.12 – Buy-and-Hold-Abnormal-Returns (BHARs) of SMEs PPs (cont.)

Panel E: BHARs of various horizons for Private Placements by Small and Medium Sized Enterprises (SMEs) with High vs. Low Underpricing								
	Overall (N = 728)		High Underpricing Tercile (N = 160)		Low Underpricing Tercile (N = 288)		Difference	
Horizon (relative to Event date)	BHAR	t_ Adjusted	BHAR	t_ Adjusted	BHAR	t_ Adjusted	BHAR	t_ Adjusted
3 Years Pre	0.4186*	(1.7024)	0.5888	(1.0988)	0.1722	(1.1312)	0.4166***	(6.6892)
2 Years Pre	0.4171**	(2.0775)	0.5876	(1.3430)	0.2596**	(2.0882)	0.3280***	(5.8293)
1 Year Pre	0.2497*	(1.7592)	0.3573	(1.1548)	0.0182	(0.2074)	0.3390***	(7.1652)
1 Year Post	-0.0718	(0.5061)	-0.1703	(0.5504)	-0.0294	(0.3350)	-0.1408***	(2.9762)
2 Years Post	-0.1899	(0.9460)	-0.3862	(0.8827)	-0.1536	(1.2356)	-0.2326***	(4.1339)
3 Years Post	-0.2627	(1.0683)	-0.5539	(1.0337)	-0.1431	(0.9397)	-0.4109***	(6.5979)

Buy and Hold Abnormal Returns (BHAR) employ the market adjusted model to estimate the expected returns: $BHAR_i = \prod_{t=1}^{T}(1 + R_{i,t}) - \prod_{t=1}^{T}(1 + R_{m,t})$, where the $R_{i,t}$ and $R_{m,t}$ are daily returns of event (i.e. deal) i and the market respectively, on day t and T is the appropriate holding horizon. The SEOs were conducted on either the Main Market or the Alternative Investment Market (AIM) of the London Stock Exchange from 1995 to 2015. SMEs refer to small and medium sized enterprises while Large to the rest. First SEO represents instances when a firm issued its first SEO and Follow-On SEOs to the later offerings. Overvalued and Undervalued represent upper and lower tercile firms respectively when ranked by misvalaution. Misvaluation for a firm is defined as its market value 30 days before the issue date less the fundamental value estimated from the latest financial statements available prior to the issue date, Fundamental values are themselves estimated from the valuation model specified by Rhodes-Kropf, Robinson and Vsiwanathan (2005). Low growth and High growth represent firms that had low or high growth prospects respectively, where growth values were estimated from the valuation model specified by Rhodes-Kropf, Robinson and Vsiwanathan (2005). High and Low Underpricing refer to measures of underpricing of the issue and is specified by Altinkilic and Hansen (2003) and compares the offer price to the market price after the issue date. Significance levels at the 1%, 5% and 10% levels are represented by ***, ** and * respectively, while standard errors are reported in parentheses.

event, there is a reversal in returns. During the years following the deal BHARs become negative but insignificant. The MM listed SMEs have insignificant results for all the windows we examine. Regarding the differences between the AIM and MM subsamples, there are in most cases insignificant.

In Panel B of Table 3.12 we report BHARs for First versus Follow-on PPs by SMEs and the differences between these two groups. Regarding First time PPs, only one of the results (for one year prior to the event) appears significant. The rest of BHAR numbers are insignificant. For follow-on PP deals, there are positive and significant BHARs for the three windows before the placement. After the deal takes place, results become negative and insignificant. Some of the differences between the two subgroups are significant. However, as discussed above, for this particular deal grouping (First time versus Follow-on deals), we need to draw conclusions with caution, since results from the Follow-on groups may be contaminated by the effect of subsequent events, which can increase the correlation among individual returns.

In Panel C of Table 3.12 we report BHARs for overvalued versus undervalued PPs by SMEs and the differences between these two groups. Overvalued SMEs have positive and significant BHARs in the three windows before the PP. After the event returns become negative and insignificant in the three years following the PP. For undervalued firms BHARs seem negative before the PP event and around zero afterwards, but none of these results is statistically significant. The differences in BHARs between overvalued and undervalued SMEs using PPs are highly significant (1% level).

Panel D of Table 3.12 shows BHARs for SME PPs with high versus low growth prospects and the differences between these two groups. Both subsamples here appear to have

positive BHARs before the PP and negative afterwards, with BHARs of high growth firms being higher than those of low growth firms, on average. The pattern for BHARs is similar for these two subsamples, but no individual BHAR result is statistically significant. However, the differences in long-run returns between high and low growth firms are significant at least at 5% level.

In Panel E of Table 3.12 we report BHARs for SMEs placing their equity privately with high underpricing versus low underpricing. Similar to previous tables, both highly and low underpriced SMEs have positive BHARs before the event and negative after. Firms that placed their equity with high underpricing perform better than firms with low underpricing in the period before the PP takes place, and worse after the event. Although individual BHAR results are insignificant for both groups examined in this panel, their differences appear to be highly significant. (1% level).

3.5 Conclusions

This study examines a sample of 2,793 UK SEO deals that raised equity capital during 1995-2014 focusing on SMEs and the Alternative Investment Market (AIM). We find that the majority of UK SEOs take the form of private placements (PPs) of equity while approximately 69% of all deals are conducted by firms listed on AIM. SMEs conduct some 82% of AIM PPs. AIM was established in 1995 as a lightly regulated platform designed mostly for small, young, high growth and innovative firms that were either unable or unwilling to meet the more stringent regulatory criteria for listing and engaging in follow- on fundraising on the main market (MM).

Around 92% of AIM deals take the form of PPs. SMEs issuing via PPs differ in three important respects from those on MM. They enjoy much higher growth prospects, are

more undervalued relative to their fundamentals and are more underpriced. We argue that our results can explain why institutional investors are willing to participate in the financing of such high risk firms that impose adverse selection on them. We conclude that PPs allow firms to alleviate part of the information asymmetry of public offers through the conventional dimensions of greater private disclosure and underpricing of the offer, as well as the higher growth and undervaluation we observe.

We estimate the market reactions to the issue of new equity, in the short term employing cumulative abnormal returns (CARs) and the long term employing buy and hold abnormal returns (BHARs). We find significant abnormal price reactions from the market and that the market discriminates among different types of issuers, responding differentially to first issues as compared to follow on issues, overvalued as compared to undervalued firms, high growth versus low growth and as well as degree of underpricing of the offer. We find these results both when we adjust for cross-sectional correlations as well as when we do not. For robustness, we estimate CARs using expected returns estimated from market models as well as market adjusted models estimates and out results are qualitatively mostly unchanged.

We find that the market reaction to Private Placements is nearly 0.71% and 2.21% as measured by CARs in the two-day and ten-day windows prior to the issue date respectively. Interestingly we document that there is no long term underperformance as measured by the BHAR over the three years post-issue. The market reaction to small and medium enterprises (SMEs) issuing equity is nearly 0.45% and 1.70% as measured by CARs in the two-day and ten-day windows prior to the issue date respectively. We again document that there is no long term underperformance post-issue among SMEs.

The market reaction to private placements by SMEs is nearly 0.38% and 1.57% as measured by CARs in the two-day and ten-day windows prior to the issue date respectively and as previously noted, long term underperformance is not evident.

While prior studies report a long-run underperformance for SEOs for one, two, three and some cases up to five years post SEO issue dates, we find that when standard errors are adjusted for cross-correlations, this pattern disappears. While we can replicate the results reported in previous studies, which find that that there is significant long run underperformance in post-issue periods, when we adjust for cross-sectional correlations among firms' abnormal returns we find there is no significant long term reaction over the three years post-issue. We conclude that lack of adjustment for cross-sectional correlation among sample firms must have contributed to the findings of previous studies that long term underperformance prevailed among those firms raising equity via SEOs, when in fact there were none.

In other words, there is no evidence of long term underperformance of SEOs. This is a particularly important implication for AIM, since it has been an exchange that some consider as a high-risk market for investors. Overall, we conclude that although AIM can attract high-risk firms, it is not on average an exchange disproportionally populated with failing firms, inappropriate and unsafe for investors. Nevertheless, this study cannot provide sufficient evidence on whether AIM-like markets would be suitable in every county, as this is highly dependent on the particular characteristics of each market as well as the regulatory framework in place.

APPENDIX

Table A3.6 – Cumulative Abnormal Returns (CARs) of Seasoned Equity Offereings (SEOs) by Small and Medium Enterprises (SMEs).

Panel A: CARs for Small and Medium Sized Enterprises (SMEs) on the Main Market (MM) and Alternative Investment Marke								
	Overall (N = 1353)		Main Market (N = 240)		AIM (N = 1113)		Difference	
Window	CAR	Std error	CAR	Std error	CAR	Std error	CAR	Std error
- 1,+1	-0.0087	(0.0209)	0.0039	(0.0061)	-0.0114	(0.0502)	-0.0153	(0.0271)
- 5,+5	-0.0112	(0.0116)	0.0011	(0.0066)	-0.0139	(0.0317)	-0.0150	(0.0225)
- 1,0	0.0034	(0.0021)	-0.0023	(0.0193)	-0.0020	(0.0082)	0.0003	(0.0010)
- 2,0	0.0025	(0.0026)	-0.0070	(0.0355)	0.0016	(0.0171)	0.0086	(0.0633)
- 10,0	0.0088	(0.0056)	0.0040	(0.0026)	0.0022	(0.0032)	-0.0018	(0.0976)
0,+1	-0.0110	(0.0073)	0.0115**	(0.0056)	0.0027	(0.0132)	-0.0088	(0.0077)
0,+2	-0.0081	(0.0185)	0.0219***	(0.0066)	0.0060	(0.0110)	-0.0159*	(0.0096)

Panel B: CARs for Small and Medium Sized Enterprises (SMEs) in First and Follow-On SEOs								
	Overall (N = 1353)		First SEO (N = 87)		Follow On SEOs (N = 1266)		Difference	
Window	CAR	Std error	CAR	Std error	CAR	Std error	CAR	Std error
- 1,+1	-0.0087	(0.0209)	-0.0091	(0.0426)	-0.0027	(0.0080)	0.0063	(0.0119)
- 5,+5	-0.0112	(0.0116)	-0.0134	(0.0228)	0.0200	(0.0122)	0.0334	(0.0203)
- 1,0	0.0034	(0.0021)	-0.0047	(0.0554)	0.0365	(0.0457)	0.0412	(0.0507)
- 2,0	0.0025	(0.0026)	-0.0039	(0.0130)	0.0578	(0.0825)	0.0617	(0.0793)
- 10,0	0.0088	(0.0056)	0.0018	(0.0032)	0.0139	(0.0120)	0.0122	(0.0139)
0,+1	-0.0110	(0.0073)	0.0037	(0.0075)	0.0127	(0.0148)	0.0090	(0.0170)
0,+2	-0.0081	(0.0185)	0.0072	(0.0080)	0.0328	(0.0217)	0.0257	(0.0232)

Panel C: CARs for SEOs by Small and Medium Sized Enterprises (SMEs) that are Overvalued vs. Undervalued								
	Overall (N = 1353)		Undervalued (N = 307)		Overvalued (N = 585)		Difference	
Window	CAR	Std error	CAR	Std error	CAR	Std error	CAR	Std error
- 1,+1	-0.0087	(0.0209)	-0.0060	(0.0098)	0.0028	(0.0019)	0.0089**	(0.0039)
- 5,+5	-0.0112	(0.0116)	-0.0046	(0.0325)	0.0068	(0.0075)	0.0114	(0.0165)
- 1,0	0.0034	(0.0021)	0.0224*	(0.0121)	-0.0046	(0.0297)	-0.0271	(0.0186)
- 2,0	0.0025	(0.0026)	-0.0265	(0.0274)	0.0240	(0.1707)	0.0504	(0.0668)
- 10,0	0.0088	(0.0056)	0.0030	(0.0053)	0.0105***	(0.0032)	0.0074**	(0.0036)
0,+1	-0.0110	(0.0073)	0.0042	(0.0154)	0.0107*	(0.0055)	0.0064	(0.0054)
0,+2	-0.0081	(0.0185)	0.0160	(0.0112)	0.0031	(0.0065)	-0.0130	(0.0248)

Panel D: CARs for SEOs by Small and Medium Sized Enterprises (SMEs) with High vs. Low Growth Prospects								
	Overall (N = 1353)		Low Growth (N = 462)		High Growth (N = 379)		Difference	
Window	CAR	Std error	CAR	Std error	CAR	Std error	CAR	Std error
- 1,+1	-0.0087	(0.0209)	-0.0006	(0.0008)	-0.0095	(0.1337)	-0.0089	(0.0242)
- 5,+5	-0.0112	(0.0116)	-0.0174*	(0.0104)	-0.0074	(0.0394)	0.0100	(0.0065)
- 1,0	0.0034	(0.0021)	-0.0297	(0.0222)	0.0277	(0.0177)	0.0574***	(0.0216)
- 2,0	0.0025	(0.0026)	-0.0826***	(0.0275)	0.0845**	(0.0328)	0.1671***	(0.0385)
- 10,0	0.0088	(0.0056)	-0.0016	(0.0019)	0.0051**	(0.0024)	0.0066	(0.0050)
0,+1	-0.0110	(0.0073)	-0.0038	(0.0051)	0.0084	(0.0069)	0.0122*	(0.0066)
0,+2	-0.0081	(0.0185)	-0.0058	(0.0079)	0.0209**	(0.0097)	0.0267**	(0.0112)

Panel E: CARs for SEOs by Small and Medium Sized Enterprises (SMEs) with High vs. Low Underpricing								
	Overall (N = 1353)		Low Underpricing (N = 373)		High Underpricing (N = 559)		Difference	
Window	CAR	Std error	CAR	Std error	CAR	Std error	CAR	Std error
- 1,+1	-0.0087	(0.0209)	-0.0188	(0.0127)	0.0094**	(0.0042)	0.0282***	(0.0092)
- 5,+5	-0.0112	(0.0116)	-0.0313*	(0.0188)	0.0087	(0.0058)	0.0400***	(0.0132)
- 1,0	0.0034	(0.0021)	-0.0346	(0.0337)	0.0095	(0.0948)	0.0442	(0.0444)
- 2,0	0.0025	(0.0026)	-0.0600**	(0.0263)	0.0322	(0.6134)	0.0923	(0.0572)
- 10,0	0.0088	(0.0056)	-0.0054***	(0.0018)	0.0119*	(0.0063)	0.0172***	(0.0061)
0,+1	-0.0110	(0.0073)	-0.0107	(0.0070)	0.0190***	(0.0071)	0.0297***	(0.0079)
0,+2	-0.0081	(0.0185)	-0.0096	(0.0078)	0.0191*	(0.0101)	0.0288***	(0.0107)

Abnormal returns are computed by employing market adjusted models, which compute simple differences from market returns. The SEOs were conducted on either the Main Market or the Alternative Investment Market (AIM) of the London Stock Exchange from 1995 to 2015. SMEs refer to small and medium sized enterprises while Large to the rest. First SEO represents instances when a firm issued its first SEO and Follow-On SEOs to the later offerings. Overvalued and Undervalued represent upper and lower tercile firms respectively when ranked by misvalaution. Misvaluation for a firm is defined as its market value 30 days before the issue date less the fundamental value estimated from the latest financial statements available prior to the issue date, Fundamental values are themselves estimated from the valuation model specified by Rhodes-Kropf, Robinson and Vsiwanathan (2005). Low growth and High growth represent firms that had low or high growth prospects respectively, where growth values were estimated from the valuation model specified by Rhodes-Kropf, Robinson and Vsiwanathan (2005). High and Low Underpricing refer to measures of underpricing of the issue and is specified by Altinkilic and Hansen (2003) and compares the offer price to the market price after the issue date.

Table A3.7 - Cumulative Abnormal Returns (CARs) of Seasoned Equity Offereings (SEOs) via Private Placements (PPs).

Panel A: CARs of Private Placements by Small and Medium Sized Enterprises (SMEs) and Large firms								
	Overall (N = 1405)		Large firms (N = 425)		SMEs (N = 981)		Difference	
Window	CAR	Std error	CAR	Std error	CAR	Std error	CAR	Std error
- 1,+1	0.0035***	(0.0003)	0.0046	(0.0049)	0.0030***	(0.0009)	-0.0017*	(0.0010)
- 5,+5	0.0099***	(0.0008)	0.0071	(0.0053)	0.0111	(0.0073)	0.0040	(0.0031)
- 1,0	0.0048***	(0.0005)	0.0210*	(0.0118)	0.0232	(0.0263)	0.0022***	(0.0005)
- 2,0	0.0060***	(0.0006)	0.0081	(0.0150)	0.0404	(0.0662)	0.0323	(0.0685)
- 10,0	0.0158***	(0.0010)	0.0036**	(0.0019)	0.0071***	(0.0009)	0.0034**	(0.0014)
0,+1	-0.0001***	(0.0000)	0.0059**	(0.0024)	0.0122	(0.0086)	0.0063	(0.0079)
0,+2	0.0051***	(0.0004)	0.0086***	(0.0032)	0.0188**	(0.0089)	0.0102	(0.0130)

Panel B: CARs for Private Placements on the Main Market (MM) and Alternative Investment Market (AIM)								
	Overall (N = 1405)		Main Market (N = 405)		AIM (N = 1001)		Difference	
Window	CAR	Std error	CAR	Std error	CAR	Std error	CAR	Std error
- 1,+1	0.0035***	(0.0003)	0.0130***	(0.0039)	-0.0004	(0.0003)	-0.0133***	(0.0020)
- 5,+5	0.0099***	(0.0008)	0.0172	(0.0120)	0.0069	(0.0053)	-0.0103***	(0.0020)
- 1,0	0.0048***	(0.0005)	0.0220	(0.0196)	0.0228	(0.0184)	0.0008***	(0.0003)
- 2,0	0.0060***	(0.0006)	0.0130	(0.0157)	0.0377	(0.0890)	0.0247***	(0.0088)
- 10,0	0.0158***	(0.0010)	0.0072***	(0.0025)	0.0056***	(0.0017)	-0.0016***	(0.0006)
0,+1	-0.0001***	(0.0000)	0.0133***	(0.0040)	0.0091	(0.0080)	-0.0042***	(0.0006)
0,+2	0.0051***	(0.0004)	0.0139**	(0.0059)	0.0165**	(0.0075)	0.0027**	(0.0011)

Panel C: CARs in various windows for Private Placements in First and Follow-On SEOs								
	Overall (N = 1405)		First SEO (N = 174)		Follow On SEOs (N = 1232)		Difference	
Window	CAR	Std error	CAR	Std error	CAR	Std error	CAR	Std error
- 1,+1	0.0035***	(0.0003)	0.0039*	(0.0020)	0.0008**	(0.0004)	-0.0030	(0.0042)
- 5,+5	0.0099***	(0.0008)	0.0095	(0.0059)	0.0125***	(0.0040)	0.0030***	(0.0005)
- 1,0	0.0048***	(0.0005)	0.0215	(0.0195)	0.0304**	(0.0144)	0.0089***	(0.0011)
- 2,0	0.0060***	(0.0006)	0.0270	(0.1128)	0.0563*	(0.0310)	0.0293***	(0.0035)
- 10,0	0.0158***	(0.0010)	0.0065**	(0.0029)	0.0025	(0.0134)	-0.0041***	(0.0015)
0,+1	-0.0001***	(0.0000)	0.0106*	(0.0062)	0.0080*	(0.0044)	-0.0026***	(0.0010)
0,+2	0.0051***	(0.0004)	0.0157**	(0.0062)	0.0161**	(0.0077)	0.0004***	(0.0001)
Panel D: CARs for Private Placement that are Overvalued vs. Undervalued								
	Overall (N = 1405)		Undervalued (N = 364)		Overvalued (N = 543)		Difference	
Window	CAR	Std error	CAR	Std error	CAR	Std error	CAR	Std error
- 1,+1	0.0035***	(0.0003)	0.0119**	(0.0056)	0.0119***	(0.0024)	0.0000	(0.0000)
- 5,+5	0.0099***	(0.0008)	0.0265***	(0.0079)	0.0193*	(0.0116)	-0.0072	(0.0060)
- 1,0	0.0048***	(0.0005)	0.0522***	(0.0185)	0.0090	(0.1636)	-0.0431***	(0.0150)
- 2,0	0.0060***	(0.0006)	0.0105	(0.0093)	0.0399	(0.0585)	0.0294**	(0.0131)
- 10,0	0.0158***	(0.0010)	0.0108***	(0.0029)	0.0104**	(0.0039)	-0.0005	(0.0005)
0,+1	-0.0001***	(0.0000)	0.0155	(0.0102)	0.0130	(0.0093)	-0.0025	(0.0186)
0,+2	0.0051***	(0.0004)	0.0303***	(0.0109)	0.0071	(0.0111)	-0.0233*	(0.0122)

Panel E: CARs for Private Placements with High vs. Low Growth Prospects								
	Overall (N = 1405)		High Growth (N = 415)		Low Growth (N = 472)		Difference	
Window	CAR	Std error	CAR	Std error	CAR	Std error	CAR	Std error
- 1,+1	0.0035***	(0.0003)	0.0056	(0.0035)	0.0053***	(0.0016)	-0.0002	(0.0004)
- 5,+5	0.0099***	(0.0008)	0.0023	(0.0038)	0.0250***	(0.0065)	0.0227***	(0.0068)
- 1,0	0.0048***	(0.0005)	0.0168	(0.0255)	0.0662***	(0.0214)	0.0494***	(0.0153)
- 2,0	0.0060***	(0.0006)	-0.0280**	(0.0133)	0.1330***	(0.0346)	0.1610***	(0.0246)
- 10,0	0.0158***	(0.0010)	0.0045**	(0.0021)	0.0095**	(0.0038)	0.0050	(0.0047)
0,+1	-0.0001***	(0.0000)	0.0044	(0.0048)	0.0205*	(0.0110)	0.0162**	(0.0070)
0,+2	0.0051***	(0.0004)	0.0075	(0.0060)	0.0338***	(0.0106)	0.0263***	(0.0084)

Panel F: CARs for Private Placements with High vs. Low Underpricing								
	Overall (N = 1405)		Low Underpricing (N = 340)		High Underpricing (N = 571)		Difference	
Window	CAR	Std error	CAR	Std error	CAR	Std error	CAR	Std error
- 1,+1	0.0035***	(0.0003)	-0.0054	(0.0210)	0.0265**	(0.0101)	0.0319***	(0.0053)
- 5,+5	0.0099***	(0.0008)	-0.0071	(0.0907)	0.0418***	(0.0130)	0.0489***	(0.0107)
- 1,0	0.0048***	(0.0005)	-0.0100	(0.0849)	0.0519	(0.4178)	0.0619	(0.9638)
- 2,0	0.0060***	(0.0006)	-0.0403	(0.0310)	0.0692	(0.0843)	0.1095	(0.8956)
- 10,0	0.0158***	(0.0010)	-0.0064	(0.0056)	0.0284***	(0.0054)	0.0348***	(0.0051)
0,+1	-0.0001***	(0.0000)	-0.0094	(0.0231)	0.0398**	(0.0152)	0.0492***	(0.0086)
0,+2	0.0051***	(0.0004)	-0.0091	(0.0189)	0.0401**	(0.0204)	0.0492***	(0.0113)

Abnormal returns are computed by employing market adjusted models, which compute simple differences from market returns. The SEOs were conducted on either the Main Market or the Alternative Investment Market (AIM) of the London Stock Exchange from 1995 to 2015. SMEs refer to small and medium sized enterprises while Large to the rest. First SEO represents instances when a firm issued its first SEO and Follow-On SEOs to the later offerings. Overvalued and Undervalued represent upper and lower tercile firms respectively when ranked by misvalaution. Misvaluation for a firm is defined as its market value 30 days before the issue date less the fundamental value estimated from the latest financial statements available prior to the issue date, Fundamental values are themselves estimated from the valuation model specified by Rhodes-Kropf, Robinson and Vsiwanathan (2005). Low growth and High growth represent firms that had low or high growth prospects respectively, where growth values were estimated from the valuation model specified by Rhodes-Kropf, Robinson and Vsiwanathan (2005). High and Low Underpricing refer to measures of underpricing of the issue and is specified by Altinkilic and Hansen (2003) and compares the offer price to the market price after the issue date.

Table A3.8 - Cumulative Abnormal Returns (CARs) of Seasoned Equity Offereings (SEOs) via Private Placemetns (PPs) by Small and Medium Enterprises (SMEs).

Panel A: CARs for Private Placements by Small and Medium Sized Enterprises (SMEs) on the Main Market (MM) and Alterna								
	Overall (N = 980)		Main Market (N = 169)		AIM (N = 812)		Difference	
Window	CAR	Std error	CAR	Std error	CAR	Std error	CAR	Std error
- 1,+1	0.0030	(0.0022)	0.0152	(0.0094)	0.0004	(0.0003)	-0.0147	(0.0370)
- 5,+5	0.0111*	(0.0067)	0.0169	(0.0169)	0.0099	(0.0121)	-0.0069	(0.0132)
- 1,0	0.0060	(0.0039)	0.0122	(0.0276)	0.0255	(0.0468)	0.0133	(0.0724)
- 2,0	0.0071*	(0.0040)	-0.0157	(0.1371)	0.0520	(0.1582)	0.0678	(1.2911)
- 10,0	0.0189**	(0.0079)	0.0075	(0.0073)	0.0070***	(0.0017)	-0.0005	(0.0311)
0,+1	-0.0018	(0.0036)	0.0171*	(0.0089)	0.0112	(0.0131)	-0.0059	(0.0068)
0,+2	0.0056	(0.0039)	0.0216**	(0.0098)	0.0183	(0.0129)	-0.0034	(0.0033)

Panel B: CARs in various windows for Private Placements by Small and Medium Sized Enterprises (SMEs) in First and Follo								
	Overall (N = 980)		First SEO (N = 82)		Follow On SEOs (N = 899)		Difference	
Window	CAR	Std error	CAR	Std error	CAR	Std error	CAR	Std error
- 1,+1	0.0030	(0.0022)	0.0032*	(0.0017)	0.0007	(0.0013)	-0.0025	(0.0138)
- 5,+5	0.0111*	(0.0067)	0.0107	(0.0098)	0.0152	(0.0092)	0.0044	(0.0063)
- 1,0	0.0060	(0.0039)	0.0218	(0.0417)	0.0386	(0.0427)	0.0168	(0.0239)
- 2,0	0.0071*	(0.0040)	0.0385	(0.4622)	0.0605	(0.0522)	0.0220	(0.0218)
- 10,0	0.0189**	(0.0079)	0.0069***	(0.0021)	0.0091	(0.0178)	0.0022	(0.0577)
0,+1	-0.0018	(0.0036)	0.0126	(0.0108)	0.0079	(0.0089)	-0.0048	(0.1025)
0,+2	0.0056	(0.0039)	0.0185	(0.0116)	0.0223	(0.0206)	0.0037	(0.0084)

Panel C: CARs for Private Placements by Small and Medium Sized Enterprises (SMEs) that are Overvalued vs. Undervalued								
	Overall (N = 980)		Undervalued (N = 232)		Overvalued (N = 431)		Difference	
Window	CAR	Std error	CAR	Std error	CAR	Std error	CAR	Std error
- 1,+1	0.0030	(0.0022)	0.0106***	(0.0033)	0.0145***	(0.0006)	0.0039	(0.0034)
- 5,+5	0.0111*	(0.0067)	0.0290**	(0.0129)	0.0210*	(0.0116)	-0.0080	(0.0586)
- 1,0	0.0060	(0.0039)	0.0579**	(0.0255)	-0.0046	(0.0126)	-0.0625*	(0.0366)
- 2,0	0.0071*	(0.0040)	0.0278	(0.0933)	0.0257	(1.3230)	-0.0021	(0.0104)
- 10,0	0.0189**	(0.0079)	0.0112***	(0.0036)	0.0144***	(0.0037)	0.0032	(0.0024)
0,+1	-0.0018	(0.0036)	0.0167	(0.0136)	0.0168	(0.0117)	0.0001	(0.0002)
0,+2	0.0056	(0.0039)	0.0354***	(0.0129)	0.0085	(0.0152)	-0.0269	(0.0277)

Panel D: CARs for Private Placements by Small and Medium Sized Enterprises (SMEs) with High vs. Low Growth Prospects								
	Overall (N = 980)		Low Growth (N = 361)		High Growth (N = 247)		Difference	
Window	CAR	Std error	CAR	Std error	CAR	Std error	CAR	Std error
- 1,+1	0.0030	(0.0022)	0.0028	(0.0067)	0.0054*	(0.0028)	0.0026	(0.0038)
- 5,+5	0.0111*	(0.0067)	-0.0081	(0.0145)	0.0271***	(0.0093)	0.0352**	(0.0148)
- 1,0	0.0060	(0.0039)	-0.0060	(0.0083)	0.0725**	(0.0283)	0.0785**	(0.0330)
- 2,0	0.0071*	(0.0040)	-0.0661**	(0.0252)	0.1549***	(0.0420)	0.2210***	(0.0496)
- 10,0	0.0189**	(0.0079)	0.0008	(0.0055)	0.0123**	(0.0052)	0.0114	(0.0098)
0,+1	-0.0018	(0.0036)	0.0011	(0.0105)	0.0245**	(0.0117)	0.0234*	(0.0120)
0,+2	0.0056	(0.0039)	0.0091	(0.0191)	0.0374***	(0.0125)	0.0283*	(0.0159)

Panel E: CARs for Private Placements by Small and Medium Sized Enterprises (SMEs) with High vs. Low Underpricing								
	Overall (N = 980)		Low Underpricing (N = 271)		High Underpricing (N = 381)		Difference	
Window	CAR	Std error	CAR	Std error	CAR	Std error	CAR	Std error
- 1,+1	0.0030	(0.0022)	-0.0104	(0.0132)	0.0335***	(0.0104)	0.0439***	(0.0128)
- 5,+5	0.0111*	(0.0067)	-0.0189	(0.0200)	0.0566***	(0.0101)	0.0756***	(0.0197)
- 1,0	0.0060	(0.0039)	-0.0254	(0.0356)	0.0744	(0.1724)	0.0998	(0.1089)
- 2,0	0.0071*	(0.0040)	-0.0647**	(0.0302)	0.1074	(0.4825)	0.1721	(0.1425)
- 10,0	0.0189**	(0.0079)	-0.0079*	(0.0043)	0.0297***	(0.0078)	0.0375***	(0.0116)
0,+1	-0.0018	(0.0036)	-0.0167	(0.0148)	0.0468***	(0.0104)	0.0635***	(0.0151)
0,+2	0.0056	(0.0039)	-0.0148	(0.0145)	0.0461**	(0.0184)	0.0609***	(0.0202)

Abnormal returns are computed by employing market adjusted models, which compute simple differences from market returns. The SEOs were conducted on either the Main Market or the Alternative Investment Market (AIM) of the London Stock Exchange from 1995 to 2015. SMEs refer to small and medium sized enterprises while Large to the rest. First SEO represents instances when a firm issued its first SEO and Follow-On SEOs to the later offerings. Overvalued and Undervalued represent upper and lower tercile firms respectively when ranked by misvalaution. Misvaluation for a firm is defined as its market value 30 days before the issue date less the fundamental value estimated from the latest financial statements available prior to the issue date, Fundamental values are themselves estimated from the valuation model specified by Rhodes-Kropf, Robinson and Vsiwanathan (2005). Low growth and High growth represent firms that had low or high growth prospects respectively, where growth values were estimated from the valuation model specified by Rhodes-Kropf, Robinson and Vsiwanathan (2005). High and Low Underpricing refer to measures of underpricing of the issue and is specified by Altinkilic and Hansen (2003) and compares the offer price to the market price after the issue date.

Chapter 4. Capital structure of multiple equity issuers in the UK

4.1 Introduction

Firms adopt a number of approaches to seek funding when they need money to either fund their projects and operations or reduce their debt. One of the typical means available for firms to raise funds is through equity issuances. After their initial public offering (IPO), firms may return to the market to raise additional funds to finance their needs. These transactions are known as secondary or seasoned equity offerings (SEOs) and can be either public or private. Prior literature has extensively explored these deals from many perspectives (stock liquidity, profitability, performance etc.) and how markets perceive them.

Conventional reasons for firms to raise equity finance have revolved around the exercise of growth options, while firms may, quite rightly, direct fresh equity to reduce their leverage. Prior studies on SEOs have investigated an array of issues. Few studies, though, have explored multiple sequential equity issuing by the same company (see for example D'Mello et al., 2003, Iqbal , 2008, Iqbal et al., 2013, and Walker et al., 2016). Those that have studied multiple issuances, focused on performance related aspects associated with the raising of equity finance but have largely ignored the obvious effect that equity must have on leverage. This is all the more surprising when it appears that the capital structure literature has also not extensively investigated the phenomenon of multiple equity issuers, to our knowledge. We investigate this dimension.

In this chapter, we study the relation between the frequency of equity issuances and

a firm's debt structure. We investigate whether the intention to seek additional funds by issuing equities is to reduce existing debt or improve cash holdings. Specifically, we examine to what extent multiple equity issuance affects firm leverage ratios. We also analyze whether there are differences in the cash and debt management policies between multiple and single equity issuers.

This study is based on an initial sample of 1,242 UK public-listed firms issuing equity during the period 1995-2015 and listed on London main market (MM) or London Alternative Investment Market (AIM). The type of market is related to the features of firms making equity issues since investors seem to perceive the quality of the firm and/or their riskiness differently across the two markets. We collect deal data from Thomson One and all the accounting data needed from DataStream. After matching and collecting data from both databases, we end up with a sample of 1,033 firms of which 65% have issued equity more than once during the sample period. Out of 666 multiple issuers, 62% are firms listed on AIM. On average, AIM firms issue equity 5.04 times while MM firms 4.15 times, a difference that is statistically significant.

We find that multiple equity issuing firms have higher leverage than single issuers. In addition, we find that multiple equity issuers have higher growth and lower short-term-to-total debt ratios, on average, compared to one-off issuers. The differences in leverage between multiple and single equity issuers show that multiple equity issuers do not reduce their existing debt even though they have additional funds from issuing equity. This motivates us to investigate whether multiple equity issuers have a different cash flow sensitivity of debt compared to that of single issuers. We find that both multiple and single issuers tend to increase their cash holdings when there is an increase in their cash flow. In addition, we investigate whether such

patterns differ between firms listed on London main market (MM) and firms listed on Alternative Investment Market (AIM). We find that AIM firms tend to increase their cash holdings when there is an increase in cash flow. Firms listed on MM, particularly for single equity issuers, change both their debt and cash holding positions when there is a change in cash flow. Finally, we examine the debt and cash holding sensitivity to cash flow of financially constrained and unconstrained firms. We find that multiple and single equity issuers, both constrained and unconstrained, increase their cash holdings when cash flow increases. However, only constrained multiple issuers change their debt positions when there is a cash flow change. Since there are no uncontested measures of financial constraints, we follow prior literature and employ different ways of measuring financial constraints.

Regarding multiple issuers, we contribute to the SEO and capital structure literatures in two ways. We find new evidence that multiple issuers maintain higher debt levels than do one-off issuers, a pattern seen among firms on the main market and AIM. When additional cash becomes available, firms exhibit clear differences in their preferences between changing their debt or cash holdings. We find differences between MM and AIM firms in how they employ new infusions of equity. While firms on the MM change their debt and cash positions when cash flow increases, AIM issuers focus on changing their cash holding.

The structure of the chapter is as follows. Section 4.2 reviews relevant past studies and develops our hypotheses. Section 4.3 describes our sample, and empirical methods. Section 4.4 discusses our empirical findings and Section 4.5 summarizes and concludes.

4.2 Literature review and hypotheses development

4.2.1 Frequency of seasoned equity issues

After making their initial public offering (IPO), firms may return to the markets for issuing additional equity when needed. This process, known as secondary or seasoned equity offering (SEO), is well explored in the literature. Firms can issue equity publicly (Rights Issues, Open Offers) and/or privately with institutional investors (Private Placements, PIPEs). There is no restriction on how many times firms can issue their equities, which means they can choose to issue equity one or more times according to their financing needs and see how the market reacts to their equity issue announcements. Public equity issues or private equity issues, or a combination of the two can be employed, with the final target being to secure the necessary funds at the best possible terms for the issuing firm.

By focusing on the equity issuing specifics and their implications, we should not ignore that firms have also alternative ways to get access to the funds needed to cover their needs. Bank loans and issuing debt instruments are quite common ways for firms to raise financing. However, it is unlikely that financing decisions of firms are independent of each other. In fact, different corporate decisions about acquiring financing dynamically affect the capital structure of firms. While most previous studies have focused on the analysis of single type external financing events, Billett et al. (2011) take into account different types of external financing and explore the well documented underperformance following external financing, providing a different insight in explaining the phenomenon. They consider different types of external claims (IPOs, SEOs, bank loans, public debt offerings and private equity offerings)

conducted by US firms and provide evidence that the use of multiple financing patterns lead to worse performance compared to single events. Their results imply that underperformance is not caused necessarily by raising external financing per se but it is linked with the frequency and the variety of sources of external financing used by the issuing firm.

Prior literature has extensively explored different aspects related to SEOs. Ranging from measuring SEO firms' performance and market reaction before, around and after the announcement of the SEO deal, exploring different factors that could explain the abnormal returns observed, discounts and their potential drivers around SEOs, role of management and underwriters in SEOs, the spectrum covered is vast. Nevertheless, compared to the extensive prior research on SEOs less attention has been given to the fact that some firms issue equity multiple times throughout their operational life. In fact, each equity issue conducted by a firm is treated by most researchers as an independent event in their sample of events during the period examined. It remains an empirical question, however, whether these equity issue events are truly independent. Firm characteristics after each equity issue may change such as, size, leverage, growth, etc. It has been noticed that not all companies issue equity multiple times, either because it is too costly for them and/or they have secured access to alternative sources.

A few studies have examined multiple equity issues but these have focused mainly on the performance of frequent versus infrequent issuers, providing some interesting findings. D'Mello et al. (2003) examine the relation between the sequence of SEOs and announcement returns for 2,286 equity deals conducted by industrial, financial, and utility firms during 1979-1996. Results from the industrial subsample of firms

show that, in each successive equity issue, investors react less negatively. The level of information asymmetry before the announcement of the equity issue decreases every time a firm issues equity. Lower information asymmetry decreases the adverse selection costs investors face in an equity issue. This implies a less negative market reaction on the announcement of the deal. They claim that equity issuers seem to be aware of the information asymmetry decline and the advantages of this decline and thus during subsequent equity issues, firms both issue more capital and shorten the time period between successive SEOs.

Building upon and extending the work of D'Mello et al. (2003), Iqbal (2008) examines the market reaction to announcement of rights issues in the UK during 1988-1998, taking into consideration the sequence in which companies conduct multiple right issue deals. He uses a sample of 569 rights issues by 243 UK firms in the industrial and financial sector and finds that the negative market reaction after the announcement of the rights issues diminishes after the first issue and becoming insignificant after the third rights issue. His study provides evidence that when it comes to multiple equity issues, the level of information asymmetry declines and this is the reason behind the less negative market reaction at or after the third rights issue announcement in the UK. Working along the same lines and increasing the UK sample size, Iqbal et al. (2013) study the long-run performance of UK firms conducting multiple right issues between 1988 and 2008. They provide evidence that 53% of the rights issues in the UK are conducted by firms which make two or more issues during the sample period. Also, they find that companies issuing equity three times or more do not experience significant long run underperformance. Their findings underline the importance of distinguishing between frequent and infrequent equity issuers as opposed to study all equity issuing firms as a homogenous group.

It seems that investors perceive multiple issuing of equity as signal of good quality and thus investing in them would be better off compared to investing in single issuers. Reinforcing this argument, in a more recent study Walker et al. (2016) find that multiple SEOs can be used by equity issuing firms to build credibility with the market. Capital markets appear to have long memory and reward or penalize an equity issuing firm, when it returns in the market to raise money in a follow-on deal, based on the performance during its previous SEO. In other words, it is likely that good quality firms (or at least those firms the markets perceive as good quality ones) are returning to the market to raise additional financing, a finding in line with the results of Hovakimian and Hutton (2010).

Based on the evidence provided by previous studies, issuing equity multiple times sends a positive signal to investors for the quality of the issuing firm, as markets would not repetitively accept equity from such a firm if equity sold was overvalued. Additionally, multiple equity issuing could also be seen as a mechanism to build credibility and reduce the information asymmetry between firms and the market. By raising money multiple times through SEOs, it is likely that an issuing firm will increase in size, become more known to investors and the markets and be more extensively studied by market analysts compared to an infrequent issuer. Thus, the asymmetric information between the frequent equity issuer and investors might be reduced. Although, as documented by previous studies, issuing equity frequently could help reduce the information asymmetry between issuers and the market, someone could think that issuing equity repeatedly is a costly way to reduce information asymmetry (floatation costs, cost for preparation of prospectus, etc.). However, the cost associated with the issuance of equity depends on different factors. For example, the type of the equity issue (public issuance of equity versus

private placement of equity), the need (or not) to issue prospectus and how extensive this document should be, the discounting that the equity issuer will offer, how overvalued or undervalued is the firm and the market on which the equity issuing company is listed.

Our study focuses on companies listed either on London primary main market (MM) or Alternative Investment Market (AIM). AIM, established in 1995, is a secondary exchange regulated market. It is a platform for small firms with good growth prospects to get listed in the IPOs market and return for raising additional financing when needed (SEOs). London MM and AIM tend to attract different companies with different financing and investment agendas (Doukas and Hoque, 2016). In the post-IPO period AIM companies are getting involved more in SEOs while MM firms in acquisitions, capital changes and dividend announcements. Also, companies (UK and international) choose to list on AIM as the listing and on-going costs are lower. AIM provides a light-touch regulatory approach to issuing firms. It is this light-touch regulatory approach that has created a controversy regarding the quality of AIM as a listing platform. Independently of evidence showing that firms listed on AIM underperform in the long-run (see for example Gerakos et al., 2013), AIM has gained popularity among firms throughout the world that choose AIM as their listing avenue. The differences between London MM and AIM are the main reason we separately study these two markets.

4.2.1.1 Related hypotheses

In this chapter, we explore the impact of frequency of equity issues on corporate capital structure. According to prior literature, a non-negligible proportion of firms are conducting multiple equity issues (see for example Iqbal et al., 2008 and Iqbal et

al., 2013). In addition, in the previous two chapters we saw that many firms, in the sample of UK issuers we employ, are small companies with growth prospects at the time of the issue. This means that they are likely to be in need of funds to finance their projects and grow. Based on the above, we reach our first hypothesis:

H1: There is more multiple equity issuing than one-off equity issuing.

Compared to the main market (MM), firms in the AIM market are rather small and are generally considered to be more risky. It is, therefore, difficult for such firms to issue debt. However, they can employ the equity channel, especially Private Placements (PPs) of equity, as substantiated by the evidence in the previous two chapters. As a result, our second hypothesis is:

H2: Equity issuers listed on AIM issue more often, on average, than those on the MM.

4.2.2 Capital structure literature

Companies throughout the period of their operations need financing for various purposes, such as investing in profitable (and sometimes not) projects, reducing debt, adjusting to optimal target leverage ratios, acquiring other firms, and covering R&D and working capital needs, etc. Three main sources of financing firms employ are: internally generated funds, debt issuance, and equity issuance. Prior literature has developed different theories to explain how firms make decisions about their

capital structure, with the most popular being pecking order theory, market timing theory and trade-off theory.

According to the pecking order theory, first developed by Myers and Majluf (1984), equity is the least preferred method for firms to acquire funds since it is more costly compared to the other two methods.

A question that has arisen early on in the literature is what are the factors affecting the capital structure of firms. There is an extensive set of studies, focusing on the determinants of capital structure of firms, contributing to the literature by proposing different models and methodologies. For example, Ozkan (2001) employs panel data and investigates the determinants of target capital structure as well as the role of the adjustment process for UK firms. He provides evidence that GMM estimations are more suitable compared to OLS when exploring potential determinants of capital structure. According to his findings, UK firms have long-term target leverage ratios and they adjust to these target ratios relatively fast. Also, he reports a negative relationship between liquidity, profitability, growth prospects, non-debt tax shields and the leverage ratios of firms. Another study on the firm-specific determinants of leverage is Brav (2009). He finds evidence that the firm-specific factors that have previously been employed in the literature (profitability, growth prospects, capital expenditures, tangibility of assets, size of the firm, short-term to total debt ratio and age) can explain the leverage of both private and publicly listed firms.

Although firm-specific factors appear important in explaining the capital structure of firms, other factors may also play a role. Jong et al. (2008) study both firm- and country-specific factors affecting leverage using a sample of 42 countries. Although they find several specific firm-specific factors (size of the firm, tangibility, growth,

risk, profitability) do influence leverage, they primarily focus on the importance of country-specific factors. They distinguish the direct and indirect impact that country-specific factors have on firms' corporate structures. The indirect impact of country-specific factors is related to how these factors affect firm-specific factors and through that the choice of capital structure. Along similar lines, Gungoraydinoglu and Oztekin (2011) explore firm- and country-level determinants of capital structure in 37 countries. Using a comprehensive set of firm-specific variables as well as proxies for the institutional environment the firms belong to, they find that firm-level covariates explain two-thirds of the capital structure variations while country-level ones the remaining one-third. Institutional factors that have an impact on bankruptcy costs and taxes may affect heterogeneity in capital structures across countries more as compared to factors affecting agency and information asymmetry costs.

According to one stream of capital structure literature, firms have target leverage ratios and they try to adjust their positions to stay close to the leverage target. Different factors may affect the speed of adjustment to the optimal targeted leverage ratio. There are benefits but also costs to the firms when adjusting their capital structures to stay close to the target leverage. In the end, the firm's decision to adjust capital structure as well as the speed of adjustment depends on a cost-benefit analysis. Antoniou et al. (2008) study the choice of capital structure choice in bank- and capital-market oriented economies. They find that the size of the firm and tangibility of assets have a positive relationship with leverage, while profitability, growth prospects and share price performance a negative one, for both types of economies. Their results also suggest that firms adjust leverage to stay close to a target capital structure. They conclude that both firm-specific factors as well as the economic environment a firm operates in affect their capital structure decisions.

Focusing more on the economic environment, Cook and Tang (2010) explore the impact of macroeconomic conditions on the speed of capital structure adjustment over a 30-year period and find that firms adjust their leverage toward the target leverage ratio faster when the macroeconomic conditions are good and slower otherwise. Their findings are of significant in the light of the recent global financial crisis where poor macroeconomic conditions may have left companies unable to quickly adjust their capital structure to reach their target leverage. Another important factor affecting the capital structure of firms and the speed of adjustment towards target leverage is the regulatory environment of the company. In line with this argument, Oztekin and Flannery (2012) find that in their sample of 37 countries during 1991-2006 the effectiveness of the legal and financial institutions in a country affects the costs and benefits of converging toward the optimal target leverage ratio. Another strand of the literature investigates the interaction between liquidity and leverage. A recent study on that is Andres et al. (2014) who document a link between capital structure and information asymmetry. More specifically, they explore the impact that targeted capital structure decisions have on information asymmetries between the firms and the market. Information asymmetries are proxied by equity liquidity. Results show that a decrease in leverage leads to a decrease in liquidity, which is in turn interpreted as an increase in information asymmetry.

4.2.2.1 Related hypotheses

Since a firm's capital structure is related to its sources and uses of funds, our next testable implication is:

H3: Multiple equity issues influence a firm's leverage.

We conjecture there is a difference in capital structure between multiple equity issuers and single equity issuers. Since frequent multiple equity issuers are likely to be higher risk, higher growth firms than single issuers and most likely listed on the AIM than the main market, they will likely employ the proceeds from an SEO differently than those that raise finance in a sole SEO. Furthermore, there is also the likelihood that multiple issuers are receiving stage finance as part of a program of growth and investment. The demand for cash holdings and for urgent debt reduction will undoubtedly differ between single issuers and multiple issuers. Hence these two groups of firms are likely to differently employ the equity proceeds for debt reductions and cash holding increases. As such, multiple issuers' cash flow sensitivity of debt and cash holdings are expected to be different to those of single issuers. This leads to our next hypothesis:

H4: Multiple and single equity issues have different cash flow sensitivity of debt and cash holdings.

4.3 Sample, data and empirical methods

4.3.1 Sample of SEO deals

Similarly to the previous two chapters, in this chapter we use the same UK equity issuers dataset. Like in chapter 3 we drop the first year (1994) of our sample. The reason is that part of our analysis is related to AIM versus MM market comparisons and AIM was established in 1995. After applying all the filtering criteria discussed in detail in chapter 2, we match the sample with available Datastream data, yielding a

sample of 1,263 UK issuers. Out of this initial sample of issuers, we exclude firms that do not have all the available accounting and market data needed for our analysis, leaving a final sample of 1,033 firms (Table 4.1).

Table 4.1 Frequent and infrequent UK equity issuers

	N			Avg. no issues			t-diff
	All	MM	AIM	All	MM	AIM	AIM vs. MM
Multiple issues =1	666	255	411	4.70	4.15	5.04	-3.22
Multiple issues =0	367	211	156				
Total	1,033	466	567				

This table shows the split between frequent (multiple equity issues dummy=1) and infrequent (multiple equity issues dummy=0) equity issuers in the UK (for both Alternative Investment Market and Main Market) during 1995-2015. Infrequent equity issuers are defined in our study as firms which have issued equity only once during the sample period examined. Frequent equity issuers are firms which have issued equity 2 times or more during the sample period.

Table 4.1 shows the numbers of frequent and infrequent UK equity issuers and the average number of multiple issues on MM and AIM. More AIM listed firms issue equity (567) compared to the MM ones (466). Taking both markets together, 65% of all issuers do so frequently and 35% infrequently. Considering MM and AIM separately, 55 % of MM and 73 % AIM firms are frequent issuers. Overall, the average number of issues by multiple issuers is 4.70. There is a statistically significant difference in the average number of issues by multiple issuers between the MM (4.15) and the AIM (5.04).

4.3.2 Baseline specification and variables

Several studies have examined the determinants of leverage in different time periods and markets. In this chapter, we explore whether multiple equity issues play an important role in determining the leverage of firms, by extending Brav's (2009) methodology and estimating the following baseline model:

$$Leverage_{i,t} = \beta_0 + \beta_1 Multiple\ Equity\ Issuers + \beta_2 ROA + \beta_3 Growth + \beta_4 CAPEX + \beta_5 Tangible\ Assets + \beta_6 Size + \beta_7 Short\ to\ Total\ Debt + \beta_8 Age + \varepsilon_{i,t} \quad (4.1)$$

Leverage is defined as the ratio of book value of debt over market value of assets (market leverage). The variable Multiple Equity Issuers is a dummy that equals 1 if the firm has conducted more than 1 equity issue during 1995-2015 and 0 otherwise. Other explanatory variables include proxies for age, size, profitability and tangibility of assets. More specifically, the variables included in the analysis are return on assets (ROA), firm's growth measured by turnover changes, capital expenditures (CAPEX), tangible assets, firm's size (measured by total assets), the ratio of short-term debt over total debt and firm's age. More detailed definitions for the independent variables are provided in Appendix 4A.1. To mitigate potential endogeneity issues, independent variables are lagged by one period. Our regressions include fixed effects for year and sectors at the two-digit SIC level.

Panels A and B of Table 4.2[71] reports descriptive statistics of the variables employed. All variables, with the exception of the multiples dummy, are winsorised at the 1% level on both tails. Columns 1 to 3 in Panel A contain information about the whole sample of equity issuers while columns 4 to 6 and 7 to 9 about multiple and single equity issuers, respectively. Panel A reports statistics for means and medians for the whole sample as well as multiple and single issues. We primarily focus our discussion in these results; however in Panel B of Table 4.2 there are additional

[71] The data have been winsorised at 1% level in both the tails of the distribution. As an additional check, we winsorised data at 2.5% in each tail (results not reported here) and the results on average remain qualitatively the same.

descriptive statistics (Minimum, Maximum, Standard Deviation, values for the 5% and 95% percentiles) which provide additional information for the distribution of the variables.

Table 4.2 Descriptive statistics

PANEL A

	Full sample			Multiple issuers			Single issuers			t-diff (Multiple vs. Single)
	N	Mean	Median	N	Mean	Median	N	Mean	Median	
Multiple equity issuers (dummy)	8,062	0.687	1.000	-	-	-	-	-	-	-
Leverage (market)	8,062	0.232	0.181	5,535	0.240	0.192	2,527	0.214	0.163	-4.869
ROA	8,062	-0.063	0.043	5,535	-0.084	0.034	2,527	-0.017	0.064	7.936
Growth	8,062	1.309	1.016	5,535	1.331	1.017	2,527	1.260	1.015	-2.000
CAPEX	8,062	0.049	0.027	5,535	0.048	0.025	2,527	0.050	0.029	1.122
Tangible Assets	8,062	0.260	0.157	5,535	0.261	0.150	2,527	0.259	0.179	-0.320
Size	8,062	4.636	4.567	5,535	4.649	4.566	2,527	4.608	4.571	-2.051
Short-to-total Debt	8,062	0.466	0.396	5,535	0.457	0.379	2,527	0.483	0.424	2.998
Age	8.062	2.238	2.303	5,535	2.234	2.197	2,527	2.248	2.303	0.627

Table 4.2 reports descriptive statistics for the entire sample, as well as multiple issuers and single issuers subsamples, of UK firms issuing equity during 1995-2015. Multiple equity issues is a dummy variable taking the value of 1 when the firm issues equity more than once during the period examined and 0 otherwise. ROA is equal to the ratio of $EBIT_t$ to ((Total $Assets_t$ + Total $Assets_{t-1}$)/2) and is not in percentage terms. Growth here is defined as the ratio of Total Assets Turnover at time *t* over the Total Assets Turnover a time *t*-1. Capital Expenditures (CAPEX) are standardised using Total Assets. Tangible assets variable here is defined as property, plant and equipment over total assets. Size is the natural logarithm of Total Assets and Age the natural logarithm of age in years. It is important to mention here that the statistics above refer to 1 lag data of the reported variables, since the 1 lag data are used later our analysis. All variables are winsorised at 1% on both tails.

PANEL B	Multiple issuers					Single issuers				
	Min	Max	St.Dev.	5%	95%	Min	Max	St.Dev.	5%	95%
Leverage (market)	0.000	0.841	0.225	0.000	0.706	0.000	0.841	0.214	0.000	0.672
ROA	-3.576	0.506	0.375	-0.753	0.195	-3.576	0.506	0.344	-0.518	0.233
Growth	0.000	13.695	1.577	0.435	2.973	0.000	13.695	1.437	0.517	2.242
CAPEX	0.000	0.445	0.069	0.000	0.187	0.000	0.445	0.066	0.001	0.177
Tangible Assets	0.000	0.946	0.279	0.003	0.871	0.000	0.946	0.249	0.006	0.798
Size	1.869	6.957	0.978	3.155	6.480	1.869	6.957	0.781	3.433	5.993
Short-to-total Debt	0.000	1.000	0.364	0.000	1.000	0.000	1.000	0.356	0.001	1.000
Age	0.000	3.850	0.999	0.693	3.714	0.000	3.850	0.981	0.693	3.638

Table 4.2 reports descriptive statistics for the entire sample, as well as multiple issuers and single issuers subsamples, of UK firms issuing equity during 1995-2015. Multiple equity issues is a dummy variable taking the value of 1 when the firm issues equity more than once during the period examined and 0 otherwise. ROA is equal to the ratio of $EBIT_t$ to ((Total $Assets_t$ + Total $Assets_{t-1}$)/2) and is not in percentage terms. Growth here is defined as the ratio of Total Assets Turnover at time *t* over the Total Assets Turnover a time *t*-1. Capital Expenditures (CAPEX) are standardised using Total Assets. Tangible assets variable here is defined as property, plant and equipment over total assets. Size is the natural logarithm of Total Assets and Age the natural logarithm of age in years. It is important to mention here that the statistics above refer to 1 lag data of the reported variables, since the 1 lag data are used later our analysis. All variables are winsorised at 1% on both tails.

Over the sample period, firms issuing equity multiple times have on average higher leverage (0.240) than firms issuing only once (0.214). At the same time, multiple issuers appear to have higher growth (1.331 versus 1.260 for single issuers), more negative ROA and lower ratio of short term debt-to-total debt ratio. ROA for multiple and single equity issuers is -0.084 and -0.017 respectively, and for short term debt to-total debt ratio, 0.457 and 0.483 respectively. These results indicate that companies returning to markets to raise equity repeatedly are highly leveraged firms in need of additional money to finance their growth prospects. In terms of size, although the mean values show that multiple issuers are significantly bigger than single equity issuers, the median values show the reverse picture, which is an indication that large numbers in terms of total assets may potentially drive the results for multiple equity issuers. Table 4.3 provides additional information about the correlation of the variables used in our study. None of the correlation coefficients are particularly highly correlated to others.[72]

Table 4.3 Correlation matrix

	Growth	Tangible Assets	Age (log)	Short-to-total debt	CAPEX	ROA	Size	Multiple SEOs
Growth	1							
Tangible Assets	-0.036	1						
Age	-0.179	0.089	1					
Short/Total debt	0.043	-0.237	-0.085	1				
CAPEX	0.028	0.484	-0.111	-0.094	1			
ROA	-0.298	0.126	0.209	-0.130	-0.009	1		
Size	-0.168	0.201	0.395	-0.369	0.005	0.427	1	
Multiple SEOs	0.022	0.003	-0.007	-0.033	-0.012	-0.085	0.021	1

This table reports correlations among the different variables included in our study. The variables in this table will be the independent variables of the regression presented in Table 4.4.

[72] All correlation coefficients in Table 4.3 are below 50%.

The above findings show that multiple equity issuers do not reduce existing debt even when they receive additional funds from issuing equities. This motivates us to investigate whether multiple equity issuers have a different cash flow sensitivity of debt compared to that of single equity issuers. Thus, we move further by exploring the impact that an increase in cash flow has on the debt and cash holdings of a firm. Empirically, we follow Acharya et al. (2007) and estimate cash flow sensitivity of debt and cash holdings using a 3SLS (three-stage-least-squares) system of equations. The 3SLS method combines 2SLS (two-stage-least squares) with SUR (seemingly unrelated regression). The advantage of the method in this context is that it allows correlations of the unobserved disturbances across the different equations of the system. Also, it allows for the coefficients to be estimated simultaneously and not separately in each equation. This methodology makes intuitive sense in our case since cash flow can be used to change debt positions, cash holdings or both at the same time. The system of equations estimated is the following:

$$\Delta Debt_{i,t} = \alpha_0 + \alpha_1 Cash\ Flow_{i,t} + \alpha_2 Q_{i,t} + \alpha_3 Size_{i,t} + \alpha_4 \Delta Cash\ Hold_{i,t} + \alpha_5 Debt_{i,t-1} + \sum industr\, y_{i,t} + \sum ye\, ar_{i,t} + \varepsilon^{d}{}_{i,t} \quad (4.2)$$

$$\Delta CashHold_{i,t} = \beta_0 + \beta_1 Cash\ Flow_{i,t} + \beta_2 Q_{i,t} + \beta_3 Size_{i,t} + \beta_4 \Delta Debt_{i,t} + \beta_5 Cash\ Hold_{i,t-1} + \sum industr\, y_{i,t} + \sum ye\, ar_{i,t} + \varepsilon^{c}{}_{i,t} \quad (4.3)$$

In this study, ΔDebt is defined as the ratio of changes in long-term debt over total book value of assets, while ΔCash Hold is the ratio of changes in cash and equivalents

over total assets. Definitions for all the variables used in our analysis can be found in Appendix 4A.1.

We first examine the sensitivity of debt and cash holdings to changes in cash flow for the overall sample, as well as the multiple and single equity issuers' subsamples. Further, we explore the cash flow sensitivity of debt and cash holdings of multiple and one-off equity issuing firms listed on London main market (MM) and London Alternative Investment Market (AIM) to test whether the sensitivities of debt and cash holdings are affected by the exchange on which the issuer is listed. Finally, we try to gain further insight into how financial constrains affect these firms' cash flows. The question of interest is whether financially constrained multiple equity issuers prefer higher cash to lower debt than financially unconstrained multiple equity issuers.

More specifically, we run the same set of results for multiple and single equity issuers, distinguishing between constrained and unconstrained firms. First, we use firm size as a proxy for financial constraints.[73] Following this approach, we sort firms, according to their asset size per year, into deciles. Firms in the top (bottom) three deciles are the unconstrained (constrained) firms. Next we use two further proxies for financial constraints, primarily for robustness purposes: the dividend payout ratio and the SA (size-age) index developed by Hadlock and Pierce (2010). For the dividend payout ratio, similarly to the approach we followed for firm size, firms are ranked by their dividend payout ratio into deciles per year. The firms in the top (bottom) three deciles are the unconstrained (constrained) firms. Dividend

[73] Using size to proxy financial constraints is often used in literature. The rationale is that as firms grow bigger in size they are less likely to be financially constrained.

payout ratio is defined as dividends per share over earnings per share. [74] The SA index was created by Hadlock and Pierce (2010) to identify constrained and unconstrained firms. It uses the size and age of firms which are exogenous firm characteristics. The main idea behind this index is that as firms grow older and bigger in size they are less likely to be financially constrained. Hadlock and Pierce find a linear relationship between age and constrains and a quadratic one between size and constraints. The index is calculated as:

$$SA\ index = (-0.737 * Size) + (0.043 * Size^2) - (0.040 * Age) \quad (4.4)$$

Age is the number of years the firm is being listed while size is the natural logarithm of the inflation adjusted book value of assets. We adjust for inflation employing 2005 as the base year.

4.4. Empirical findings

4.4.1 Determinants of leverage for multiple and single issuers

Table 4.4 presents the results of the determinants of leverage. Columns 1 and 4 are for the entire sample of UK equity issuers, while columns 2, 3 and 5, 6 report results for companies listed on London main market (MM) and Alternative Investment Market (AIM), respectively. The variable that is of particular interest in this study is the multiple equity issuer dummy.

[74] This information is obtained from DataStream.

Table 4.4 Determinants of Leverage

	(1) Entire sample	(2) MM	(3) AIM	(4) Entire sample	(5) MM	(6) AIM
Multiple equity issuers (dummy)	0.029***	0.026**	0.028**	0.030***	0.029**	0.028**
	(3.126)	(1.999)	(2.211)	(3.250)	(2.276)	(2.215)
ROA	-0.018	-0.069**	-0.005			
	(-1.188)	(-2.233)	(-0.389)			
Growth	-0.001	-0.001	0.001	-0.000	0.001	0.001
	(-0.495)	(-0.287)	(0.314)	(-0.128)	(0.310)	(0.389)
CAPEX	-0.254***	-0.300***	-0.147**	-0.249***	-0.311***	-0.145**
	(-4.622)	(-3.713)	(-2.270)	(-4.576)	(-3.769)	(-2.275)
Tangible Assets	0.181***	0.202***	0.145***	0.180***	0.198***	0.145***
	(7.014)	(4.910)	(4.792)	(6.902)	(4.617)	(4.796)
Size	0.024***	0.021**	0.035***	0.021***	0.0134	0.033***
	(3.249)	(1.989)	(3.229)	(2.753)	(1.273)	(3.174)
Short-to-total Debt	-0.076***	-0.088***	-0.062***	-0.076***	-0.090***	-0.062***
	(-6.080)	(-5.115)	(-3.838)	(-6.064)	(-5.132)	(-3.838)
Age	0.021***	0.008	0.039***	0.021***	0.009	0.039***
	(4.288)	(0.968)	(6.830)	(4.295)	(1.092)	(6.801)
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes
N	8,062	4,483	3,579	8,062	4,483	3,579
Adj. R^2	0.226	0.301	0.173	0.226	0.297	0.173

Results reported in Table 4.4 are from pooled OLS regressions for the entire sample as well as the Main Market (MM) and AIM subsamples of UK firms issuing equity during 1995-2015. The dependent variable is market Leverage, defined as the ratio of book value of Debt over the market value of Total Assets. Multiple equity issues is a dummy variable taking the value of 1 when the firm issues equity more than once during the period examined and 0 otherwise. ROA is equal the ratio of $EBIT_t$ over ((Total $Assets_t$ + Total $Assets_{t-1}$)/2). Growth here is defined as the ratio of Total Assets Turnover at time t over the Total Assets Turnover a time t-1. Capital Expenditures are standardised using Total Assets. Size is the natural logarithm of Total Assets and Age the natural logarithm of age in years. Independent variables are lagged one period in order to take into account potential endogeneity issues. *, ** and *** denote statistical significance of the results at 10%, 5% and 1% level respectively. Year dummies, two-digit SIC code industry dummies as well as a constant are included in the regression (results not reported here). Standard errors are corrected for heteroscedasticity and firm and year clustering. T-statistics are reported in the parentheses.

In columns 1 to 3, for our full sample results the multiple equity issuers dummy variable is significantly positive at the 1% level (0.029), implying that firms which repeatedly return to equity markets to raise financing tend to have higher leverage. Investigating our results for MM and AIM separately, the dummy variable of interest is positive and statistically significant for AIM and MM at the 5% level (0.028 and 0.026 respectively). These results provide evidence that being a multiple equity issuer has a positive impact on leverage. In other words, companies listed on both London markets that issue equity multiple times during the period we examine are more leveraged. Return on assets (ROA) is negative and significant for MM (-0.069) at the 5% significance level. Growth, as proxied by the changes in turnover, does not have a significant impact on debt ratios for our sample. Coefficient on capital expenditures (CAPEX) is negative and significant for both AIM and MM firms, consistent with the trade-off theory. Tangibility of assets has a positive and statistically significant effect on leverage ratios for the entire sample as well as the MM and AIM subsamples, implying that firms with higher proportion of tangible assets over total assets tend to be more leveraged. Our results about the impact of size on debt ratios are in line with the findings of Brav (2009). We find the coefficient of size is positive and statistically significant for the entire sample as well as in the AIM and MM subsamples. The results indicate that bigger firms tend to be more leveraged. Furthermore, Short-to-total debt ratio is significant and negative for the whole sample as well as in each of the two subsamples for markets. This finding implies that firms with larger amount of short-term debt, i.e. debt due to be paid back within a year, tend to have lower leverage. Regarding the impact that age of the firm has on leverage our results show a positive relationship between age and debt ratios. However, the coefficients on age are significant for the aggregate sample and the AIM

subsample at the 1% level but not on the MM. This finding suggests that older firms in our sample tend to have higher leverage.[75]

As argued by Brav (2009), profitability may appear significant in the regression results not because it per se affects the debt ratios but rather because it could move firm's leverage away from the target level of leverage (Brav (2009), Hovakimian et al. (2001)). Thus, we re-estimate our baseline model but exclude the ROA variable. Columns 4 to 6 show that the multiple equity issue dummy is significant and positively related to firm leverage. This effect can be observed in both MM and AIM. In other words, our results for multiple equity issuers are independent (robust to its inclusion or exclusion) of the profitability measure (here captured by ROA).[76]

4.4.2 Cash flow sensitivity of debt and cash holdings

Table 4.5 presents the results of the 3SLS regressions (equations 4.2 and 4.3). Columns 1 and 2 show the results on the cash flow sensitivity of debt and cash holdings for the entire sample. Columns 3 and 4 (columns 5 and 6) show the results on the cash flow sensitivity of debt and cash holdings for multiple equity issuers (single equity issuers).

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75 The dependent variable in the regressions is market value leverage. However, running the same set of regressions using book value (book value of debt/book value of assets) leverage (results not reported here) leads to qualitatively similar results.

76 As an additional check, we estimate the same model without any fixed effects. The results are reported in Table 4B (4.4a) of Appendix 4B. Although the explanatory power of the model is reduced (compared to the case where year and industry fixed effects are included in the model), the results of the variables of interest do not vary significantly and remain qualitatively the same on average. When year and industry fixed effects are not present in the model, the coefficient of the dummy for multiple issuers listed on the MM becomes insignificant.

Table 4.5 Cash flow sensitivity of debt & cash holdings for multiple & single equity issuers

	Entire sample		Multiple equity issuers		Single equity issuers	
	Cash flow sensitivity of debt	Cash flow sensitivity of cash holdings	Cash flow sensitivity of debt	Cash flow sensitivity of cash holdings	Cash flow sensitivity of debt	Cash flow sensitivity of cash holdings
$Debt_{i,t-1}$	-0.180***		-0.182***		-0.212***	
	(-20.57)		(-17.00)		(-13.28)	
$CashHold_{i,t-1}$		-0.367***		-0.355***		-0.422***
		(-31.40)		(-24.54)		(-20.67)
$\Delta Debt_{i,t}$		-0.193***		-0.213***		-0.036
		(-3.459)		(-3.149)		(-0.418)
$\Delta CashHold_{i,t}$	0.047*		0.053		0.026	
	(1.691)		(1.478)		(0.616)	
$Cashflow_{i,t}$	0.016**	0.159***	0.015*	0.154***	0.017	0.193***
	(2.243)	(23.99)	(1.782)	(19.84)	(1.146)	(14.39)
$Q_{i,t}$	-0.001	0.001	-0.001	0.002**	-0.003**	-0.003*
	(-1.424)	(1.199)	(-0.685)	(2.249)	(-2.148)	(-1.733)
$Size_{i,t}$	0.001	-0.012***	0.001	-0.011***	-0.001	-0.013***
	(1.100)	(-11.24)	(1.118)	(-8.581)	(-0.492)	(-6.161)
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Adj.R^2	0.104	0.211	0.109	0.190	0.161	0.335
N	7,318	7,318	5,073	5,073	2,245	2,245

This table reports results estimated from the 3SLS regressions with year and industry fixed effects (equations 4.2 and 4.3) for debt issuance and cash holdings, following the approach of Acharya et al. (2007). Results are reported for the entire sample of UK firms issuing equity during 1995-2015 (Columns 1 and 2) as well as the subsamples of multiple equity issuers (columns 3 and 4) and single issuers (columns 5 and 6). Firms in our sample are considered multiple issuers if they have issued equity more than once in during our sample period.

Starting with the results from the entire population of firms in our sample, we see that there is a positive and significant coefficient for cash flow in both debt and cash holdings. A similar pattern holds for the subsample of multiple equity issuing firms, while for single equity issuers the coefficient of cash flow in the case of sensitivity of debt is insignificant. The findings suggest that firms alter their debt and cash holding positions when they experience an increase in their cash flow. In the case of multiple equity issuers, the coefficient of cash flow on the debt issuance regression is positive

(0.015) and significant at the 10% level. At the same time, the findings for cash holdings' sensitivity to changes in cash flow show that coefficients are positive and significant at the 1% in both the multiple and single equity issuers subsample (0.154 and 0.193 respectively). The results show that companies in both the subsamples of interest increase their cash holdings when there is an increase in cash flow, with a higher cash flow coefficient for single issuers than multiple issuers. Interestingly, multiple equity issuers alter also their debt positions when there is a change in the cash flow. [77]

Next, we investigate whether the type of market a company is listed on affects the multiple and single equity issuers' cash flow sensitivity of debt and cash holdings. Table 4.6, reports results for firms listed on the London main market in columns 1 to 4 and on AIM in columns 5 to 8.

In Table 4.6, we observe a similar pattern for the cash flow coefficient as in Table 4.5. Both multiple and one-off issuers listed on MM change their cash holding and debt positions when there is a change in cash flow. The cash flow coefficient, though, is higher in the regressions for sensitivity of cash holdings. These findings suggest that firms listed on MM, both the frequent and sole issuers, alter their debt and cash holdings when there is an increase in cash flow. For firms listed on AIM, we find that the cash flow coefficients on debt are insignificant for both multiple and single issuers. On the other hand, the coefficients in the cash holding sensitivity regressions are positive and significant at the 1% level for both subsamples of interest. These results suggest that firms listed on AIM, which are usually small size firms and considered risky compared to those on MM, tend to increase their cash holdings

[77] When the model is estimated without any fixed effects (results are in Table 4B (4.5a) of Appendix 4B) the results remain qualitatively the same.

Table 4.6 Cash flow sensitivity of debt and cash holdings for multiple and single equity issuers on London MM and AIM

	MM				AIM			
	Multiple equity issuers		Single equity issuers		Multiple equity issuers		Single equity issuers	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Cash flow sensitivity of debt	Cash flow sensitivity of cash holdings	Cash flow sensitivity of debt	Cash flow sensitivity of cash holdings	Cash flow sensitivity of debt	Cash flow sensitivity of cash holdings	Cash flow sensitivity of debt	Cash flow sensitivity of cash holdings
$Debt_{i,t-1}$	-0.179***		-0.210***		-0.245***		-0.228***	
	(-11.41)		(-11.44)		(-15.64)		(-7.977)	
$CashHold_{i,t-1}$		-0.311***		-0.338***		-0.436***		-0.530***
		(-16.71)		(-14.14)		(-19.42)		(-14.30)
$\Delta Debt_{i,t}$		-0.200**		0.017		-0.213***		-0.163
		(-2.267)		(0.202)		(-2.676)		(-0.974)
$\Delta CashHold_{i,t}$	0.136**		0.024		0.017		0.014	
	(2.208)		(0.326)		(0.422)		(0.259)	
$Cashflow_{i,t}$	0.029*	0.170***	0.138***	0.301***	0.016	0.152***	-0.002	0.153***
	(1.702)	(12.17)	(4.243)	(11.91)	(1.511)	(15.07)	(-0.105)	(7.430)
$Q_{i,t}$	0.002	0.010***	-0.006***	0.006**	-0.001	-0.001	-0.002	-0.006***
	(1.509)	(7.053)	(-2.760)	(2.395)	(-1.256)	(-0.710)	(-1.274)	(-2.664)
$Size_{i,t}$	0.000	-0.005***	-0.003	-0.011***	-0.005**	-0.016***	0.000	-0.021***
	(0.174)	(-2.988)	(-1.290)	(-5.160)	(-2.288)	(-6.376)	(0.017)	(-4.404)
Fixed effects:								
Industry	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj.R^2	0.128	0.134	0.253	0.300	0.153	0.255	0.191	0.397
N	2,585	2,585	1,463	1,463	2,488	2,488	782	782

Table 4.6 reports results from 3SLS (with year and industry fixed effects) models for debt issuance and cash holdings, following the approach of Acharya et al. (2007). Our sample consists of UK firms issuing equity during the period 1995-2015. Results are reported for multiple and single equity issuers listed in London primary main market (MM) in columns 1 & 2 and 3 & 4 respectively. Similar results for firms listed on AIM are reported in columns 5 to 8.

when there is an increase in the cash flow. Taken together, the cash flow sensitivity of cash holdings for firms listed on MM is higher than that for firms listed on AIM. Firms listed on MM also have significant cash flow sensitivity of net debt, particularly for single equity issuers. These results suggest that, for single equity issuers, the change of their cash holdings is related to their internal cash flow, implying their tight financing activities. [78]

4.4.3 Further analysis with financial constraints

In this section, we investigate whether financial constraints play a role in the sensitivity of debt and cash holdings in cash flow changes for multiple and single equity issuers, respectively. In Table 4.7 we use firm size to distinguish financially constrained from unconstrained firms. Panel A shows the results of cash flow sensitivity of debt for constrained and unconstrained firms in the aggregate sample (columns 1 and 2), multiple issuers (columns 3 and 4) and single issuers (columns 5 and 6). Similarly, the results of the cash flow sensitivity of cash holdings are reported in Panel B.

In Panel A, the results indicate that the coefficient on cash flow is positive (0.028) and significant at the 5% level for constrained multiple issuers but insignificant for unconstrained firms. This finding suggests that constrained firms that issue equity multiple times change their debt positions when the cash flow changes and the relationship between cash flow and changes in debt is a positive one. The results for the cash flow sensitivity of debt for the subsample of single issuers are insignificant for both constrained and unconstrained firms.

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78 When the model is estimated without any fixed effects (results are in Table 4B (4.6a) of Appendix 4B) the results remain qualitatively the same.

Table 4.7 Cash flow sensitivity of debt & cash holdings for multiple & single equity issuers: financial constraint by firm size

PANEL A: Cash flow sensitivity of debt						
	Entire sample		Multiple equity issuers		Single equity issuers	
	Constrained	Unconstrained	Constrained	Unconstrained	Constrained	Unconstrained
	(1)	(2)	(3)	(4)	(5)	(6)
$Debt_{i,t-1}$	-0.218***	-0.225***	-0.213***	-0.207***	-0.233***	-0.316***
	(-13.58)	(-12.43)	(-11.26)	(-9.209)	(-7.299)	(-9.014)
$\Delta CashHold_{i,t}$	0.002	0.442***	-0.001	0.535**	0.0101	-0.292
	(0.070)	(2.666)	(-0.020)	(2.491)	(0.209)	(-1.472)
$Cashflow_{i,t}$	0.024**	-0.056	0.028**	-0.093	0.004	-0.001
	(2.496)	(-0.923)	(2.408)	(-1.203)	(0.221)	(-0.008)
$Q_{i,t}$	-0.001	-0.008	0.000	-0.002	-0.003*	-0.009
	(-0.797)	(-1.585)	(0.022)	(-0.295)	(-1.940)	(-0.658)
$Size_{i,t}$	-0.014***	-0.012***	-0.013***	-0.014***	-0.018***	-0.021***
	(-5.333)	(-4.299)	(-3.886)	(-3.755)	(-3.610)	(-3.367)
Fixed effects:						
Industry	Yes	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes	Yes
Adj.R^2	0.163	0.139	0.176	0.131	0.262	0.261
N	2,233	2,090	1,611	1,559	622	531

This table reports results estimated from the 3SLS regressions with year and industry fixed effects (equations 4.2 and 4.3) for debt issuance and cash holdings, following the approach of Acharya et al. (2007). Here, we make the distinction between constrained and unconstrained firms. As a proxy to identify (un)constrained firms we use the asset size of the issuing firm (per year). Results are reported for constrained and unconstrained firms for the entire sample of UK firms issuing equity during 1995-2015 (Columns 1 and 2) as well as the subsamples of multiple equity issuers (columns 3 and 4) and single issuers (columns 5 and 6). Firms in our sample are considered multiple issuers if they have issued equity more than once in during our sample period. Panel A contains the results for cash flow sensitivity of debt while Panel B the results for cash flow sensitivity of cash holdings.

Table 4.7. Cash flow sensitivity of debt & cash holdings for multiple & single equity issuers: financial constraint by firm size (cont.)

PANEL B: Cash flow sensitivity of cash holdings						
	Entire sample		Multiple equity issuers		Single equity issuers	
	Constrained	Unconstrained	Constrained	Unconstrained	Constrained	Unconstrained
	(1)	(2)	(3)	(4)	(5)	(6)
$CashHold_{i,t-1}$	-0.538***	-0.176***	-0.510***	-0.157***	-0.613***	-0.353***
	(-21.94)	(-10.08)	(-17.06)	(-7.587)	(-14.62)	(-8.012)
$\Delta Debt_{i,t}$	-0.397***	0.039	-0.396***	0.072	-0.052	-0.070
	(-3.996)	(0.844)	(-3.339)	(1.181)	(-0.270)	(-1.090)
$Cashflow_{i,t}$	0.170***	0.180***	0.169***	0.188***	0.165***	0.250***
	(15.54)	(5.983)	(13.25)	(5.175)	(7.494)	(3.900)
$Q_{i,t}$	-0.000	0.015***	0.001	0.010***	-0.004*	0.038***
	(-0.359)	(4.746)	(0.420)	(2.915)	(-1.740)	(4.636)
$Size_{i,t}$	-0.029***	-0.007***	-0.027***	-0.006**	-0.032***	-0.005
	(-7.268)	(-3.623)	(-5.698)	(-2.371)	(-4.089)	(-1.332)
Fixed effects:						
Industry	Yes	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes	Yes
Adj.R^2	0.292	0.115	0.270	0.115	0.475	0.227
N	2,233	2,090	1,611	1,559	622	531

In Panel B, there is positive and statistically significant (at the 1% level) relationship between cash holding and cash flow changes for both constrained and unconstrained firms among multiple and single issuers. Our findings suggest that multiple and single issuers, independently of whether they are financially constrained or not, increase their cash holdings when there is an increase in cash flow. Overall, our results suggest that single issuers, whether constrained and unconstrained, increase their cash holdings rather than change their debt when there is a cash flow increase. The same applies for multiple issuers. However, constrained multiple issuers change both their debt and cash holding positions when there is an increase in cash flow.

Since the prior literature employed different methods to distinguish financially constrained from unconstrained firms, we employ two additional methods. In this manner we establish whether our main findings are robust to different ways of measuring constraints. More specifically, apart from firm size (Table 4.7) we also use the dividend payout ratio (Table 4.8) and the size-age index (SA index) (Table 4.9). Therefore, Tables 4.8 and 4.9 provide the same information as Table 4.7 but relates to the two additional constraint measures.

Similarly to Table 4.7, Table 4.8 Panel A has our findings for cash flow sensitivity of debt for the entire sample (columns 1 and 2), multiple (columns 3 and 4) and single (columns 5 and 6) equity issuers. The coefficient of cash flow is positive and statistically significant at the 5% level for constrained firms in the aggregate sample and the subsample of firms issuing equity multiple times. The results for the cash flow sensitivity of cash holdings in Panel B of Table 4.8 are consistent with our findings in Table 4.7. The coefficient of cash flow is positive and significant at least at the 5% level, for the aggregate sample as well as the subsamples of multiple and

Table 4.8 Cash flow sensitivity of debt and cash holdings for multiple and Single equity issuers: financial constraint proxied by dividend payout ratio

PANEL A: Cash flow sensitivity of debt						
	Entire sample		Multiple equity issuers		Single equity issuers	
	Constrained	Unconstrained	Constrained	Unconstrained	Constrained	Unconstrained
	(1)	(2)	(3)	(4)	(5)	(6)
$Debt_{i,t-1}$	-0.229***	-0.126***	-0.231***	-0.111***	-0.257***	-0.202***
	(-18.04)	(-7.600)	(-15.81)	(-5.005)	(-9.016)	(-7.387)
$\Delta CashHold_{i,t}$	0.009	0.141	0.007	0.246	0.016	0.201
	(0.281)	(0.844)	(0.169)	(1.133)	(0.317)	(1.099)
$Cashflow_{i,t}$	0.021**	-0.011	0.021**	0.003	0.008	-0.025
	(2.346)	(-0.184)	(2.089)	(0.0292)	(0.382)	(-0.302)
$Q_{i,t}$	-0.001	0.003	-0.000	-0.003	-0.004**	0.009*
	(-1.211)	(0.714)	(-0.125)	(-0.591)	(-2.543)	(1.933)
$Size_{i,t}$	-0.005***	0.001	-0.004**	-0.001	-0.009**	-0.001
	(-2.867)	(0.271)	(-2.281)	(-0.199)	(-2.430)	(-0.211)
Fixed effects:						
Industry	Yes	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes	Yes
Adj.R^2	0.144	0.168	0.154	0.166	0.204	0.232
N	3,601	1,881	2,737	1,202	864	679

This table reports results of 3SLS regressions with year and industry fixed effects (equations 4.2 and 4.3) for debt issuance and cash holdings, following the approach of Acharya et al. (2007). Here, we make the distinction between constrained and unconstrained firms. As a proxy to identify (un)constrained firms we use the dividend payout ratio (dividends per share / earnings per share) of the issuing firm (per year). Results are reported for constrained and unconstrained firms for the entire sample of UK firms issuing equity during 1995-2015 (Columns 1 and 2) as well as the subsamples of multiple equity issuers (columns 3 and 4) and Single issuers (columns 5 and 6). Firms are considered multiple issuers if they issued equity more than once in the sample period. Panel A is for cash flow sensitivity of debt and Panel B for cash flow sensitivity of cash holdings.

Table 4.8. Cash flow sensitivity of debt and cash holdings for multiple and Single equity issuers: financial constraint proxied by dividend payout ratio (cont.)

PANEL B: Cash flow sensitivity of cash holdings						
	Entire sample		Multiple equity issuers		Single equity issuers	
	Constrained	Unconstrained	Constrained	Unconstrained	Constrained	Unconstrained
	(1)	(2)	(3)	(4)	(5)	(6)
$CashHold_{i,t-1}$	-0.455***	-0.124***	-0.427***	-0.119***	-0.551***	-0.214***
	(-24.96)	(-8.475)	(-19.96)	(-6.578)	(-15.92)	(-7.754)
$\Delta Debt_{i,t}$	-0.262***	0.096	-0.253***	0.108	-0.0985	0.056
	(-3.755)	(1.031)	(-3.163)	(0.801)	(-0.719)	(0.584)
$Cashflow_{i,t}$	0.164***	0.154***	0.157***	0.249***	0.184***	0.135**
	(17.93)	(4.003)	(15.20)	(4.626)	(9.080)	(2.360)
$Q_{i,t}$	0.001	-0.001	0.001	-0.004	-0.004*	0.009**
	(0.538)	(-0.282)	(1.262)	(-0.985)	(-1.649)	(2.342)
$Size_{i,t}$	-0.017***	0.002	-0.017***	0.004***	-0.025***	-0.003
	(-8.580)	(1.504)	(-7.070)	(2.854)	(-5.253)	(-1.354)
Fixed effects:						
Industry	Yes	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes	Yes
Adj.R^2	0.253	0.095	0.231	0.138	0.418	0.183
N	3,601	1,881	2,737	1,202	864	679

single issuers whether constrained or unconstrained.

Employing the SA index to distinguish constrained and unconstrained firms lead us to similar results to those reported in Tables 4.7 and 4.8. The same structure applies to Table 4.9 as for the previous tables.

In Panel A we see that the cash flow sensitivity of debt is positive for constrained firms in the aggregate sample as well as for multiple issuers, as previously. Interestingly, however, when the SA index is employed, cash flow coefficient becomes significant for unconstrained firms in the aggregate and for multiple issuers samples. Similarly to our findings in Tables 4.7 and 4.8, in Panel B of Table 4.9 we see that the cash flow coefficients are all positive and significant for all samples and for constrained and unconstrained firms. In other words, overall, our findings are robust to different methods of distinguishing financially constrained and unconstrained firms.

4.4.4 Discussion on an alternative definition for the multiple issuers dummy variable

In this part we come back to our multiple equity issuers dummy variable, and consider an alternative definition. As a reminder, the dummy variable used in the analysis so far is equal to 1 when the firm is a multiple issuer and 0 otherwise. This practically means that a firm is classified as a multiple issuer (dummy equal to 1) for all the firm-years in the sample and similarly for single issuers (dummy equal to 0).

The rationale behind this definition for our multiple issuer dummy is that the purpose of this study is to investigate, given the sample of firms for a specified time period (1995-2015), particular characteristics of multiple issuers in the UK,

Table 4.9 Cash flow sensitivity of debt and cash holdings for multiple and Single equity issuers: financial constraint proxied by SA index

PANEL A: Cash flow sensitivity of debt

	Entire sample		Multiple equity issuers		Single equity issuers	
	Constrained	Unconstrained	Constrained	Unconstrained	Constrained	Unconstrained
	(1)	(2)	(3)	(4)	(5)	(6)
$Debt_{i,t-1}$	-0.231***	-0.178***	-0.234***	-0.179***	-0.244***	-0.209***
	(-18.18)	(-14.21)	(-15.56)	(-11.01)	(-9.885)	(-9.808)
$\Delta CashHold_{i,t}$	0.030	0.184**	0.028	0.201**	0.030	0.067
	(1.000)	(2.371)	(0.738)	(2.111)	(0.667)	(0.597)
$Cashflow_{i,t}$	0.019**	0.054**	0.018*	0.056**	0.014	0.045
	(2.359)	(2.288)	(1.893)	(1.968)	(0.893)	(0.846)
$Q_{i,t}$	-0.001*	0.002	-0.001	0.002	-0.003**	0.001
	(-1.689)	(0.769)	(-0.615)	(0.980)	(-2.369)	(0.264)
$Size_{i,t}$	-0.006***	-0.003*	-0.007***	-0.003	-0.004	-0.006**
	(-3.846)	(-1.679)	(-3.329)	(-1.292)	(-1.293)	(-2.020)
Fixed effects:						
Industry	Yes	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes	Yes
Adj.R^2	0.154	0.099	0.169	0.101	0.210	0.160
N	3,714	3,604	2,599	2,474	1,115	1,130

This table reports results 3SLS regressions with year and industry fixed effects (equations 4.2 and 4.3) for debt issuance and cash holdings, following the approach of Acharya et al. (2007). Here, we make the distinction between constrained and unconstrained firms. As a proxy to identify (un)constrained firms we use the SA (size-age) index developed by Hadlock and Pierce (2010). We define firms with above median SA index score as constrained and below median as unconstrained. Results are reported for constrained and unconstrained firms for the entire sample of UK firms issuing equity during 1995-2015 (Columns 1 and 2) as well as the subsamples of multiple equity issuers (columns 3 and 4) and Single issuers (columns 5 and 6). Firms are considered multiple issuers if they issued equity more than once in the sample period. Panel A is for cash flow sensitivity of debt and Panel B for cash flow sensitivity of cash holdings.

Table 4.9. Cash flow sensitivity of debt and cash holdings for multiple and Single equity issuers: financial constraint proxied by SA index (cont.)

PANEL B: Cash flow sensitivity of cash holdings

	Entire sample		Multiple equity issuers		Single equity issuers	
	Constrained	Unconstrained	Constrained	Unconstrained	Constrained	Unconstrained
	(1)	(2)	(3)	(4)	(5)	(6)
$CashHold_{i,t-1}$	-0.445***	-0.230***	-0.428***	-0.232***	-0.507***	-0.313***
	(-25.19)	(-16.69)	(-19.77)	(-13.83)	(-16.83)	(-11.63)
$\Delta Debt_{i,t}$	-0.278***	0.048	-0.254***	-0.011	-0.086	0.050
	(-3.791)	(0.889)	(-2.985)	(-0.165)	(-0.635)	(0.641)
$Cashflow_{i,t}$	0.166***	0.126***	0.159***	0.136***	0.192***	0.133***
	(18.79)	(7.516)	(15.59)	(6.949)	(10.81)	(3.350)
$Q_{i,t}$	0.000	0.007***	0.001	0.005***	-0.005**	0.017***
	(-0.025)	(4.109)	(1.009)	(2.884)	(-2.466)	(4.718)
$Size_{i,t}$	-0.021***	-0.004***	-0.019***	-0.004***	-0.028***	-0.001
	(-9.248)	(-3.112)	(-7.077)	(-2.660)	(-6.433)	(-0.269)
Fixed effects:						
Industry	Yes	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes	Yes
Adj.R^2	0.249	0.134	0.237	0.152	0.397	0.191
N	3,714	3,604	2,599	2,474	1,115	1,130

primarily focusing on leverage. However, we also employ an alternative definition of the multiple issuers dummy and estimate the same models, discussed above, to check if the alternative definition will affect the robustness of our results. More specifically, according to this alternative definition, the multiple issuers dummy is taking the value of 1 if the company conducted more than one equity issues after the current time and not the whole time period 1995-2015, and the value of 0 otherwise.

The new set of results can be found in Appendix 4C. The patterns observed in the descriptive statistics (Table 4.2 in the main chapter and 4C (4.2) in the Appendix) have not changed for the mean and median values. In terms of the impact of the multiple issuer dummy variable on leverage (Tables 4.4 and 4C (4.4) in the main chapter and Appendix respectively) we find that although the coefficient of the dummy variable is positive, it is statistically significant only for the MM and not AIM, under the new definition. Results on the cash flow sensitivity of debt and cash holdings, on average, do not vary significantly when using the alternative definition for multiple issuers. The coefficient of interest (Cash Flow) remains positive but it appears significant only in the cases of changes in cash holdings. This pattern is observed also when the analysis is distinguishing between multiple and single equity issuers on the MM versus AIM, with the exception of single equity issuers listed on the MM where the Cash Flow coefficient is significant for both changes I debt and cash holdings. Multiple and single issuers on AIM as well as multiple issuers listed on the MM increase their cash holdings when there is an increase in cash flow. Single equity issuers listed on MM change both their debt and cash holding positions when there is an increase in cash flow. The latter finding is consistent with our findings in Table 4.6, implying that our results are not dependent on the multiple issuer definition used.

When we introduce the distinction between financially constrained and unconstrained firms, using firm size to proxy for financial constraints[79], we find that main results remain on average unchanged for the cash flow sensitivity of cash holdings. The Cash Flow coefficient remains positive for changes in cash holdings and is significant independently of the definition used for multiple issuers. Similarly, when dividend payout ratio and SA index are used to distinguish financially constrained and unconstrained firms the coefficient of the variable of interest remain qualitatively the same. The implication of this additional analysis is that our findings in Chapter 4 are robust to the alternative definition of multiple equity issuers dummy.

4.5 Conclusion

In this chapter, we explore whether issuing equity multiple times impacts the firm's capital structure. Firms need financing for their operations, fund their growth prospects and make investments or reduce debt. Frequent issuing of equity confers upon firms an option to frequently reduce their indebtedness. In this light, we examine whether multiple equity issuers tend to have lower firm leverage. Furthermore, we investigate whether multiple equity issuers' capital structure differs between the AIM and MM.

Employing a sample of UK firms issuing equity during 1995-2015, we examine the impact of frequency of equity issues on firms' leverage separately on the MM and the AIM. AIM firms are on average small companies (SMEs) and considered more risky than firms listed on the MM. Thus, access to debt financing seems a bit of a challenge

[79] Please also refer to the discussion made in the main chapter about the different proxies used to distinguish between financially constraint and unconstrained firms.

for AIM firms, leading us to our conjecture that AIM firms raise equity multiple times for their corporate needs.

Further, we investigate the sensitivity of debt and cash holdings to changes in cash flow for both multiple and single equity issuing firms. Our findings are in line with our Hypotheses. In the entire sample of UK firms used in our study, 65% have issued equity more than once during the period 1995-2015. From these multiple issuers, 62% are AIM firms. On average, AIM firms issue equity 5.04 times while MM firms 4.15 times, a difference which is statistically significant. In addition, multiple equity issuing firms have higher leverage and growth and lower short-term to-total debt ratio on average compared to one-off issuers. These findings imply that multiple equity issuers do not use additional funds from issuing equity to reduce their debt.

Next, we study the cash flow sensitivity of debt and cash holdings for multiple equity issuers, single equity issuers, firms listed on MM and AIM, and firms with and without financial constraints. Our results show that both multiple and single equity issuers increase their cash holdings when there is an increase in the cash flow. Multiple equity issuers change also their debt positions when there is an increase in cash flow. We find that AIM firms increase their cash holding when there is an increase in cash flow, while firms listed on the MM, particularly single issuers, change both their debt and cash holding positions when there is a change in cash flow. Finally, multiple and single equity issuers, whether constrained or not, increase their cash holdings when cash flow increases. Our results are robust to the inclusion or not of fixed effects in the models and also an alternative definition given to multiple equity issuers dummy.

Appendix 4A
Table 4A.1 Variable definition

Variable	Definitions
Leverage	Book value of debt over market value of assets
Multiple equity issues (dummy)	Dummy variable taking the value of 1 when the firm issues equity more than once during the period examined and 0 otherwise
ROA	Ratio of $EBIT_t$ over ((Total $Assets_t$ + Total $Assets_{t-1}$)/2)
Growth	Ratio of Total Assets Turnover at time $_t$ over the Total Assets Turnover a time $_{t-1}$
CAPEX	Capital expenditures standardised using total assets
Tangible Assets	Property, plant and equipment over total assets
Size	Total assets in natural logarithm
Short-to-total Debt	Ratio of short-term debt over total debt
Age	Age in years, in natural logarithm
ΔDebt	Ratio of the changes in long-term debt over total book value of assets
ΔCash Hold	Ratio of changes in cash and cash equivalents over total book value of assets
Cash Flow	Proxy for free cash flow. It is calculated as: [(Operating income - depreciation & amortisation – income tax – payment to debt holders– payment to equity holders) / total assets]
Q	Proxy for investment opportunities. It is the ratio of the market value of assets over book value of assets.
Sales size	The natural log of sales
Debt	Ratio of total long-term debt over total assets
Cash Flow	Ratio of cash and short-term investments over total assets

Appendix 4B

Table 4B (4.4a) Determinants of Leverage

	(1) Entire sample	(2) MM	(3) AIM	(4) Entire sample	(5) MM	(6) AIM
Multiple equity issuers (dummy)	0.020*	0.006	0.022*	0.022**	0.011	0.022*
	(1.932)	(0.419)	(1.705)	(2.131)	(0.781)	(1.715)
ROA	-0.024*	-0.085**	-0.002			
	(-1.647)	(-2.532)	(-0.177)			
Growth	-0.000	0.000	0.000	0.000	0.003	0.000
	(-0.252)	(0.086)	(0.197)	(0.361)	(1.022)	(0.237)
CAPEX	-0.325***	-0.406***	-0.192***	-0.321***	-0.427***	-0.191***
	(-5.678)	(-4.768)	(-3.011)	(-5.598)	(-5.002)	(-3.031)
Tangible Assets	0.224***	0.262***	0.174***	0.221***	0.259***	0.173***
	(8.979)	(7.899)	(6.198)	(8.862)	(7.700)	(6.192)
Size	0.027***	0.037***	0.034***	0.023***	0.029**	0.033***
	(3.247)	(3.349)	(2.968)	(2.752)	(2.538)	(2.792)
Short-to-total Debt	-0.077***	-0.089***	-0.059***	-0.078***	-0.093***	-0.059***
	(-5.659)	(-4.291)	(-3.812)	(-5.663)	(-4.320)	(-3.823)
Age	0.019***	0.006	0.039***	0.019***	0.007	0.039***
	(3.961)	(0.743)	(6.907)	(3.950)	(0.851)	(6.849)
Year dummies	No	No	No	No	No	No
Industry dummies	No	No	No	No	No	No
N	8,062	4,483	3,579	8,062	4,483	3,579
Adj. R^2	0.139	0.169	0.104	0.138	0.162	0.105

Results reported in Table 4B (4.4a) are from pooled OLS regressions for the entire sample as well as the Main Market (MM) and AIM subsamples of UK firms issuing equity during 1995-2015. The dependent variable is market Leverage, defined as the ratio of book value of Debt over the market value of Total Assets. Multiple equity issues is a dummy variable taking the value of 1 when the firm issues equity more than once during the period examined and 0 otherwise. ROA is equal the ratio of $EBIT_t$ over ((Total $Assets_t$ + Total $Assets_{t-1}$)/2). Growth here is defined as the ratio of Total Assets Turnover at time t over the Total Assets Turnover a time t-1. Capital Expenditures are standardised using Total Assets. Size is the natural logarithm of Total Assets and Age the natural logarithm of age in years. Independent variables are lagged one period in order to take into account potential endogeneity issues. *, ** and *** denote statistical significance of the results at 10%, 5% and 1% level respectively. Standard errors are corrected for heteroscedasticity and firm and year clustering. T-statistics are reported in the parentheses.

Table 4B (4.5a) Cash flow sensitivity of debt & cash holdings for multiple & single equity issuers

	Entire sample		Multiple equity issuers		Single equity issuers	
	Cash flow sensitivity of debt	Cash flow sensitivity of cash holdings	Cash flow sensitivity of debt	Cash flow sensitivity of cash holdings	Cash flow sensitivity of debt	Cash flow sensitivity of cash holdings
$Debt_{i,t-1}$	-0.121***		-0.123***		-0.128***	
	(-15.60)		(-13.11)		(-8.971)	
$CashHold_{i,t-1}$		-0.304***		-0.296***		-0.309***
		(-28.20)		(-22.31)		(-17.00)
$\Delta Debt_{i,t}$		-0.130*		-0.104		-0.161
		(-1.783)		(-1.202)		(-1.267)
$\Delta CashHold_{i,t}$	0.060*		0.072*		0.028	
	(1.888)		(1.804)		(0.540)	
$Cashflow_{i,t}$	0.013*	0.150***	0.015*	0.143***	0.009	0.178***
	(1.785)	(22.98)	(1.646)	(18.67)	(0.610)	(14.06)
$Q_{i,t}$	-0.001*	0.001**	-0.000	0.002***	-0.003**	-0.003*
	(-1.878)	(2.061)	(-1.050)	(2.928)	(-2.178)	(-2.059)
$Size_{i,t}$	0.002***	-0.009***	0.003***	-0.009***	0.000	-0.009***
	(3.322)	(-11.35)	(3.747)	(-9.503)	(0.234)	(-6.081)
Industry dummies	No	No	No	No	No	No
Year dummies	No	No	No	No	No	No
Adj.R^2	0.040	0.182	0.042	0.168	0.039	0.239
N	7,318	7,318	5,073	5,073	2,245	2,245

This table reports results estimated from the 3SLS regressions with year and industry fixed effects (equations 4.2 and 4.3) for debt issuance and cash holdings, following the approach of Acharya et al. (2007). Results are reported for the entire sample of UK firms issuing equity during 1995-2015 (Columns 1 and 2) as well as the subsamples of multiple equity issuers (columns 3 and 4) and single issuers (columns 5 and 6). Firms in our sample are considered multiple issuers if they have issued equity more than once in during our sample period.

Table 4B (4.6a) Cash flow sensitivity of debt and cash holdings for multiple and single equity issuers on London MM and AIM

	MM				AIM			
	Multiple equity issuers		Single equity issuers		Multiple equity issuers		Single equity issuers	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Cash flow sensitivity of debt	Cash flow sensitivity of cash holdings	Cash flow sensitivity of debt	Cash flow sensitivity of cash holdings	Cash flow sensitivity of debt	Cash flow sensitivity of cash holdings	Cash flow sensitivity of debt	Cash flow sensitivity of cash holdings
$Debt_{i,t-1}$	-0.058***		-0.104***		-0.202***		-0.164***	
	(-4.862)		(-6.534)		(-13.84)		(-6.106)	
$CashHold_{i,t-1}$		-0.244***		-0.195***		-0.344***		-0.436***
		(-13.99)		(-10.16)		(-16.64)		(-12.13)
$\Delta Debt_{i,t}$		-0.007		0.097		-0.143		-0.417*
		(-0.034)		(0.677)		(-1.572)		(-1.894)
$\Delta CashHold_{i,t}$	0.207***		0.020		0.033		-0.005	
	(2.947)		(0.193)		(0.682)		(-0.085)	
$Cashflow_{i,t}$	0.034*	0.156***	0.127***	0.213***	0.007	0.140***	-0.013	0.153***
	(1.957)	(8.549)	(3.768)	(7.573)	(0.651)	(14.30)	(-0.681)	(7.626)
$Q_{i,t}$	0.002	0.009***	-0.005**	0.003	-0.002**	-0.000	-0.003	-0.006***
	(1.249)	(6.502)	(-2.214)	(1.424)	(-2.046)	(-0.476)	(-1.615)	(-2.662)
$Size_{i,t}$	-0.000	-0.005***	-0.003*	-0.004***	0.000	-0.015***	0.001	-0.014***
	(-0.165)	(-4.266)	(-1.836)	(-2.870)	(0.036)	(-6.932)	(0.361)	(-4.075)
Fixed effects:								
Industry	No	No	No	No	No	No	No	No
Year	No	No	No	No	No	No	No	No
Adj.R^2	0.016	0.149	0.063	0.154	0.081	0.192	0.052	0.255
N	2,585	2,585	1,463	1,463	2,488	2,488	782	782

Table 4B (4.6a) reports results from 3SLS (with year and industry fixed effects) models for debt issuance and cash holdings, following the approach of Acharya et al. (2007). Our sample consists of UK firms issuing equity during the period 1995-2015. Results are reported for multiple and single equity issuers listed in London primary main market (MM) in columns 1 & 2 and 3 & 4 respectively. Similar results for firms listed on AIM are reported in columns 5 to 8.

Appendix 4C. Additional analysis and robustness checks

In this Appendix we use the alternative definition for multiple issuers dummy variable discussed in section 4.4.4 of the main chapter.

Table 4C (4.2) Descriptive statistics

PANEL A

	Full sample			Multiple issuers			Single issuers			t-diff (Multiple vs. Single)
	N	Mean	Median	N	Mean	Median	N	Mean	Median	
Multiple equity issuers (dummy)_Definition 2	5,969	0.577	1.000	-	-	-	-	-	-	-
Leverage (market)	5,969	0.224	0.177	3,442	0.233	0.194	2,527	0.211	0.163	-4.142
ROA	5,969	-0.052	0.043	3,442	-0.082	0.028	2,527	-0.012	0.064	8.843
Growth	5,969	1.192	1.015	3,442	1.208	1.017	2,527	1.169	1.015	-1.767
CAPEX	5,969	0.046	0.025	3,442	0.045	0.021	2,527	0.049	0.029	2.574
Tangible Assets	5,969	0.253	0.146	3,442	0.250	0.121	2,527	0.258	0.179	1.198
Size	5,969	4.702	4.641	3,442	4.774	4.709	2,527	4.603	4.571	-7.696
Short-to-total Debt	5,969	0.451	0.365	3,442	0.428	0.320	2,527	0.483	0.424	5.877
Age	5,969	2.281	2.303	3,442	2.305	2.303	2,527	2.248	2.303	-2.291

Table 4C (4.2) reports descriptive statistics for the entire sample, as well as multiple issuers and single issuers subsamples, of UK firms issuing equity during 1995-2015. Leverage (market) is defined as the ratio of book value of Debt over the market value of Total Assets. Multiple equity issues is a dummy variable taking the value of 1 when the firm issues equity more than once during the period examined and 0 otherwise. ROA is equal to the ratio of $EBIT_t$ to ((Total $Assets_t$ + Total $Assets_{t-1}$)/2). ROA is not reported in percentage terms. Growth here is defined as the ratio of Total Assets Turnover at time *t* over the Total Assets Turnover a time *t*-1. Capital Expenditures (CAPEX) are standardised using Total Assets. Tangible assets variable here is defined as property, plant and equipment over total assets. Size is the natural logarithm of Total Assets and Age the natural logarithm of age in years. It is important to mention here that the statistics above refer to 1 lag data of the reported variables, since the 1 lag data are used later our analysis. All variables are winsorised at 2.5% on both tails.

Table 4C (4.2) Descriptive statistics (cont.)

PANEL B	Multiple issuers					Single issuers				
	Min	Max	St.Dev.	5%	95%	Min	Max	St.Dev.	5%	95%
Leverage (market)	0.000	0.704	0.215	0.000	0.704	0.000	0.704	0.205	0.000	0.672
ROA	-1.831	0.334	0.316	-0.752	0.178	-1.831	0.334	0.291	-0.518	0.233
Growth	0.012	5.730	0.903	0.433	2.776	0.012	5.730	0.797	0.517	2.242
CAPEX	0.000	0.291	0.062	0.000	0.192	0.000	0.291	0.058	0.001	0.177
Tangible Assets	0.000	0.898	0.282	0.003	0.879	0.000	0.898	0.247	0.006	0.798
Size	2.273	6.516	0.956	3.249	6.516	2.373	6.516	0.761	3.433	5.993
Short-to-total Debt	0.000	1.000	0.370	0.000	1.000	0.000	1.000	0.356	0.001	1.000
Age	0.000	3.784	0.923	0.693	3.761	0.000	3.784	0.980	0.693	3.638

Table 4C (4.3) Correlation matrix

	Growth	Tangible Assets	Age (log)	Short-to-total debt	CAPEX	ROA	Size	Multiple SEOs
Growth	1							
Tangible Assets	-0.030	1						
Age	-0.187	0.096	1					
Short/Total debt	0.044	-0.251	-0.098	1				
CAPEX	0.023	0.513	-0.079	-0.094	1			
ROA	-0.310	0.128	0.227	-0.149	0.014	1		
Size	-0.179	0.206	0.404	-0.382	0.011	0.459	1	
Multiple SEOs	0.022	-0.015	0.030	-0.075	-0.033	-0.112	0.096	1

This table reports correlations among the different variables included in our study. The variables in this table will be the independent variables of the regression presented in Table 4.4. All variables are winsorised at 2.5% on both tails.

Table 4C (4.4) Determinants of Leverage

	(1) Entire sample	(2) MM	(3) AIM	(4) Entire sample	(5) MM	(6) AIM
Multiple equity issuers (dummy)	0.019*	0.022*	0.017	0.020**	0.025*	0.017
	(1.941)	(1.714)	(1.351)	(2.024)	(1.943)	(1.364)
ROA	-0.011	-0.048	-0.008			
	(-0.758)	(-1.623)	(-0.562)			
Growth	0.003	-0.000	0.006	0.004	0.003	0.007
	(0.733)	(-0.010)	(1.370)	(0.925)	(0.413)	(1.485)
CAPEX	-0.328***	-0.370***	-0.230**	-0.327***	-0.379***	-0.227**
	(-4.636)	(-3.579)	(-2.547)	(-4.620)	(-3.630)	(-2.526)
Tangible Assets	0.203***	0.229***	0.167***	0.203***	0.229***	0.167***
	(7.174)	(5.577)	(4.619)	(7.179)	(5.571)	(4.639)
Size	0.029***	0.019*	0.046***	0.027***	0.015	0.044***
	(3.723)	(1.754)	(4.455)	(3.457)	(1.426)	(4.774)
Short-to-total Debt	-0.068***	-0.087***	-0.050***	-0.068***	-0.088***	-0.049***
	(-5.544)	(-5.097)	(-3.401)	(-5.566)	(-5.130)	(-3.398)
Age	0.011*	0.002	0.026***	0.011*	0.002	0.025***
	(1.796)	(0.223)	(2.894)	(1.795)	(0.282)	(2.851)
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes
N	5,969	3,462	2,507	5,969	3,462	2,507
Adj. R^2	0.226	0.276	0.189	0.226	0.275	0.189

Results reported in Table 4C (4.4) are from pooled OLS regressions for the entire sample as well as the Main Market (MM) and AIM subsamples of UK firms issuing equity during 1995-2015. The dependent variable is market Leverage, defined as the ratio of book value of Debt over the market value of Total Assets. Multiple equity issues is a dummy variable taking the value of 1 when the firm issues equity more than once during the period examined and 0 otherwise. ROA is equal the ratio of EBITt over ((Total Assetst + Total Assetst-1)/2). Growth here is defined as the ratio of Total Assets Turnover at time t over the Total Assets Turnover a time t-1. Capital Expenditures are standardised using Total Assets. Size is the natural logarithm of Total Assets and Age the natural logarithm of age in years. All variables are winsorised at 2.5% on both tails. Independent variables are lagged one period in order to take into account potential endogeneity issues. *, ** and *** denote statistical significance of the results at 10%, 5% and 1% level respectively. Year dummies, two-digit SIC code industry dummies as well as a constant are included in the regression (results not reported here). Standard errors are corrected for heteroscedasticity and firm and year clustering. T-statistics are reported in the parentheses.

Table 4C (4.4a) Determinants of Leverage

	(1) Entire sample	(2) MM	(3) AIM	(4) Entire sample	(5) MM	(6) AIM
Multiple equity issuers (dummy)	0.012	0.001	0.013	0.013	0.006	0.013
	(1.111)	(0.086)	(0.952)	(1.303)	(0.408)	(0.981)
ROA	-0.017	-0.067**	-0.004			
	(-1.213)	(-2.440)	(-0.250)			
Growth	0.005	0.002	0.007	0.006*	0.007	0.007
	(1.365)	(0.495)	(1.434)	(1.748)	(1.246)	(1.507)
CAPEX	-0.415***	-0.493***	-0.294***	-0.415***	-0.510***	-0.292***
	(-5.636)	(-4.715)	(-3.273)	(-5.604)	(-4.933)	(-3.261)
Tangible Assets	0.234***	0.266***	0.189***	0.233***	0.266***	0.189***
	(9.564)	(9.009)	(5.646)	(9.534)	(8.839)	(5.621)
Size	0.033***	0.036***	0.044***	0.030***	0.031***	0.043***
	(4.214)	(3.360)	(3.901)	(3.807)	(2.907)	(3.587)
Short-to-total Debt	-0.069***	-0.079***	-0.054***	-0.069***	-0.081***	-0.054***
	(-4.878)	(-3.937)	(-3.381)	(-4.903)	(-3.974)	(-3.409)
Age	0.011**	0.002	0.029***	0.011**	0.002	0.029***
	(1.996)	(0.187)	(3.608)	(1.985)	(0.244)	(3.577)
Year dummies	No	No	No	No	No	No
Industry dummies	No	No	No	No	No	No
N	5,969	3,462	2,507	5,969	3,462	2,507
Adj. R^2	0.149	0.170	0.105	0.148	0.167	0.105

Results reported in Table 4C (4.4a) are from pooled OLS regressions for the entire sample as well as the Main Market (MM) and AIM subsamples of UK firms issuing equity during 1995-2015. The dependent variable is market Leverage, defined as the ratio of book value of Debt over the market value of Total Assets. Multiple equity issues is a dummy variable taking the value of 1 when the firm issues equity more than once during the period examined and 0 otherwise. ROA is equal the ratio of EBITt over ((Total Assetst + Total Assetst-1)/2). Growth here is defined as the ratio of Total Assets Turnover at time t over the Total Assets Turnover a time t-1. Capital Expenditures are standardised using Total Assets. Size is the natural logarithm of Total Assets and Age the natural logarithm of age in years. All variables are winsorised at 2.5% on both tails. Independent variables are lagged one period in order to take into account potential endogeneity issues. *, ** and *** denote statistical significance of the results at 10%, 5% and 1% level respectively. Standard errors are corrected for heteroscedasticity and firm and year clustering. T-statistics are reported in the parentheses.

Table 4C (4.5) Cash flow sensitivity of debt & cash holdings for multiple & single equity issuers

	Entire sample		Multiple equity issuers		Single equity issuers	
	Cash flow sensitivity of debt	Cash flow sensitivity of cash holdings	Cash flow sensitivity of debt	Cash flow sensitivity of cash holdings	Cash flow sensitivity of debt	Cash flow sensitivity of cash holdings
$Debt_{i,t-1}$	-0.157***		-0.162***		-0.184***	
	(-17.10)		(-12.96)		(-13.15)	
$CashHold_{i,t-1}$		-0.307***		-0.289***		-0.346***
		(-25.17)		(-17.30)		(-18.83)
$\Delta Debt_{i,t}$		-0.106		-0.111		-0.075
		(-1.522)		(-1.197)		(-0.842)
$\Delta CashHold_{i,t}$	0.093***		0.126**		0.038	
	(2.718)		(2.557)		(0.829)	
$Cashflow_{i,t}$	0.009	0.180***	0.002	0.163***	0.027	0.237***
	(0.891)	(19.40)	(0.173)	(13.47)	(1.608)	(15.97)
$Q_{i,t}$	0.001	0.004***	0.002	0.005**	-0.000	0.003
	(1.100)	(2.714)	(1.209)	(2.482)	(-0.343)	(1.460)
$Size_{i,t}$	0.002**	-0.010***	0.003**	-0.010***	0.000	-0.013***
	(2.234)	(-9.853)	(2.100)	(-6.781)	(0.045)	(-5.956)
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Adj.R^2	0.099	0.213	0.111	0.191	0.152	0.308
N	5,286	5,286	3,041	3,041	2,245	2,245

This table reports results estimated from the 3SLS regressions with year and industry fixed effects (equations 4.2 and 4.3) for debt issuance and cash holdings, following the approach of Acharya et al. (2007). Results are reported for the entire sample of UK firms issuing equity during 1995-2015 (Columns 1 and 2) as well as the subsamples of multiple equity issuers (columns 3 and 4) and single issuers (columns 5 and 6). Firms in our sample are considered multiple issuers if they have issued equity more than once in during our sample period.

Table 4C (4.5a) Cash flow sensitivity of debt & cash holdings for multiple & single equity issuers

	Entire sample		Multiple equity issuers		Single equity issuers	
	Cash flow sensitivity of debt	Cash flow sensitivity of cash holdings	Cash flow sensitivity of debt	Cash flow sensitivity of cash holdings	Cash flow sensitivity of debt	Cash flow sensitivity of cash holdings
$Debt_{i,t-1}$	-0.092***		-0.091***		-0.103***	
	(-11.32)		(-8.255)		(-8.238)	
$CashHold_{i,t-1}$		-0.247***		-0.236***		-0.250***
		(-21.71)		(-14.90)		(-15.26)
$\Delta Debt_{i,t}$		-0.069		0.034		-0.204
		(-0.664)		(0.247)		(-1.429)
$\Delta CashHold_{i,t}$	0.136***		0.188***		0.061	
	(3.415)		(3.316)		(1.085)	
$Cashflow_{i,t}$	0.005	0.165***	0.003	0.144***	0.015	0.211***
	(0.506)	(17.97)	(0.256)	(11.78)	(0.841)	(14.76)
$Q_{i,t}$	0.002	0.005***	0.002	0.005***	-0.000	0.002
	(1.360)	(3.580)	(1.612)	(2.928)	(-0.117)	(0.961)
$Size_{i,t}$	0.002**	-0.008***	0.002**	-0.008***	0.000	-0.007***
	(2.118)	(-9.638)	(2.378)	(-7.338)	(0.146)	(-6.000)
Industry dummies	No	No	No	No	No	No
Year dummies	No	No	No	No	No	No
Adj.R^2	0.007	0.166	0.013	0.142	0.028	0.201
N	5,286	5,286	3,041	3,041	2,245	2,245

This table reports results estimated from the 3SLS regressions with year and industry fixed effects (equations 4.2 and 4.3) for debt issuance and cash holdings, following the approach of Acharya et al. (2007). Results are reported for the entire sample of UK firms issuing equity during 1995-2015 (Columns 1 and 2) as well as the subsamples of multiple equity issuers (columns 3 and 4) and single issuers (columns 5 and 6). Firms in our sample are considered multiple issuers if they have issued equity more than once in during our sample period.

Table 4C (4.6) Cash flow sensitivity of debt and cash holdings for multiple and single equity issuers on London MM and AIM

	MM				AIM			
	Multiple equity issuers		Single equity issuers		Multiple equity issuers		Single equity issuers	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Cash flow sensitivity of debt	Cash flow sensitivity of cash holdings	Cash flow sensitivity of debt	Cash flow sensitivity of cash holdings	Cash flow sensitivity of debt	Cash flow sensitivity of cash holdings	Cash flow sensitivity of debt	Cash flow sensitivity of cash holdings
$Debt_{i,t-1}$	-0.148***		-0.193***		-0.248***		-0.201***	
	(-7.904)		(-11.14)		(-13.37)		(-8.290)	
$CashHold_{i,t-1}$		-0.262***		-0.321***		-0.339***		-0.405***
		(-11.89)		(-13.67)		(-13.14)		(-12.60)
$\Delta Debt_{i,t}$		-0.101		0.003		-0.121		-0.264
		(-0.803)		(0.028)		(-1.176)		(-1.556)
$\Delta CashHold_{i,t}$	0.200**		0.067		0.053		0.032	
	(2.283)		(0.917)		(0.951)		(0.558)	
$Cashflow_{i,t}$	-0.010	0.154***	0.091***	0.282***	0.019	0.163***	0.014	0.196***
	(-0.380)	(7.763)	(3.034)	(11.60)	(1.228)	(9.811)	(0.665)	(8.095)
$Q_{i,t}$	-0.002	0.005**	-0.003	0.008***	0.005**	0.002	0.002	-0.003
	(-0.909)	(1.982)	(-0.918)	(2.629)	(2.381)	(0.804)	(0.591)	(-0.700)
$Size_{i,t}$	0.001	-0.004*	0.001	-0.004*	0.0051	-0.016***	0.004	-0.015***
	(0.392)	(-1.923)	(0.392)	(-1.923)	(0.192)	(-5.188)	(1.202)	(-3.690)
Fixed effects:								
Industry	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj.R^2	0.144	0.167	0.210	0.272	0.168	0.250	0.184	0.355
N	1,598	1,598	1,463	1,463	1,443	1,443	782	782

Table 4C (4.6) reports results from 3SLS (with year and industry fixed effects) models for debt issuance and cash holdings, following the approach of Acharya et al. (2007). Our sample consists of UK firms issuing equity during the period 1995-2015. Results are reported for multiple and single equity issuers listed in London primary main market (MM) in columns 1 & 2 and 3 & 4 respectively. Similar results for firms listed on AIM are reported in columns 5 to 8.

Table 4C (4.6a) Cash flow sensitivity of debt and cash holdings for multiple and single equity issuers on London MM and AIM

	MM				AIM			
	Multiple equity issuers		Single equity issuers		Multiple equity issuers		Single equity issuers	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Cash flow sensitivity of debt	Cash flow sensitivity of cash holdings	Cash flow sensitivity of debt	Cash flow sensitivity of cash holdings	Cash flow sensitivity of debt	Cash flow sensitivity of cash holdings	Cash flow sensitivity of debt	Cash flow sensitivity of cash holdings
$Debt_{i,t-1}$	-0.042***		-0.085***		-0.165***		-0.133***	
	(-2.944)		(-5.704)		(-9.551)		(-5.887)	
$CashHold_{i,t-1}$		-0.173***		-0.186***		-0.272***		-0.328***
		(-7.229)		(-9.982)		(-11.27)		(-10.43)
$\Delta Debt_{i,t}$		-0.349		0.055		-0.123		-0.541**
		(1.176)		(0.313)		(-0.857)		(-2.180)
$\Delta CashHold_{i,t}$	0.311***		0.069		0.129*		0.039	
	(2.923)		(0.682)		(1.946)		(0.590)	
$Cashflow_{i,t}$	0.006	0.126***	0.083***	0.201***	0.000	0.151***	-0.011	0.193***
	(0.214)	(5.168)	(2.771)	(7.609)	(0.059)	(9.315)	(-0.512)	(8.126)
$Q_{i,t}$	0.000	0.006**	-0.002	0.005*	0.003*	0.004	-0.000	-0.003
	(0.071)	(2.516)	(-0.660)	(1.872)	(1.702)	(1.590)	(-0.062)	(-0.615)
$Size_{i,t}$	-0.002	-0.003*	-0.002	-0.004***	0.002	-0.012***	0.002	-0.011***
	(-1.190)	(-1.727)	(-1.495)	(-2.620)	(0.804)	(-4.875)	(0.822)	(-3.578)
Fixed effects:								
Industry	No	No	No	No	No	No	No	No
Year	No	No	No	No	No	No	No	No
Adj.R^2	0.038	0.027	0.033	0.140	0.035	0.154	0.046	0.169
N	1,598	1,598	1,463	1,463	1,443	1,443	782	782

Table 4C (4.6) reports results from 3SLS (with year and industry fixed effects) models for debt issuance and cash holdings, following the approach of Acharya et al. (2007). Our sample consists of UK firms issuing equity during the period 1995-2015. Results are reported for multiple and single equity issuers listed in London primary main market (MM) in columns 1 & 2 and 3 & 4 respectively. Similar results for firms listed on AIM are reported in columns 5 to 8.

Table 4C (4.7) Cash flow sensitivity of debt & cash holdings for multiple & single equity issuers: financial constraint by firm size

PANEL A: Cash flow sensitivity of debt						
	Entire sample		Multiple equity issuers		Single equity issuers	
	Constrained	Unconstrained	Constrained	Unconstrained	Constrained	Unconstrained
	(1)	(2)	(3)	(4)	(5)	(6)
$Debt_{i,t-1}$	-0.199***	-0.191***	-0.203***	-0.182***	-0.213***	-0.271***
	(-12.26)	(-9.531)	(-8.859)	(-6.591)	(-8.643)	(-8.521)
$\Delta CashHold_{i,t}$	0.002	0.230	0.024	0.349**	0.025	-0.258*
	(0.505)	(1.638)	(0.403)	(2.000)	(0.511)	(-1.673)
$Cashflow_{i,t}$	0.011	0.014	0.006	-0.012	0.013	0.051
	(0.921)	(0.242)	(0.341)	(-0.148)	(0.697)	(0.500)
$Q_{i,t}$	0.003	-0.008	0.005**	0.003	0.001	-0.018
	(1.831)	(-1.400)	(2.312)	(0.385)	(0.449)	(-1.630)
$Size_{i,t}$	-0.007***	-0.016***	-0.005	-0.014***	-0.007**	-0.028***
	(-2.827)	(-5.562)	(-1.380)	(-3.671)	(-1.966)	(-4.946)
Fixed effects:						
Industry	Yes	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes	Yes
Adj.R^2	0.163	0.201	0.188	0.207	0.225	0.302
N	1,625	1,499	867	1,010	758	489

This table reports results estimated from the 3SLS regressions with year and industry fixed effects (equations 4.2 and 4.3) for debt issuance and cash holdings, following the approach of Acharya et al. (2007). Here, we make the distinction between constrained and unconstrained firms. As a proxy to identify (un)constrained firms we use the asset size of the issuing firm (per year). Results are reported for constrained and unconstrained firms for the entire sample of UK firms issuing equity during 1995-2015 (Columns 1 and 2) as well as the subsamples of multiple equity issuers (columns 3 and 4) and single issuers (columns 5 and 6). Firms in our sample are considered multiple issuers if they have issued equity more than once in during our sample period. Panel A contains the results for cash flow sensitivity of debt while Panel B the results for cash flow sensitivity of cash holdings.

Table 4C (4.7). Cash flow sensitivity of debt & cash holdings for multiple & single equity issuers: financial constraint by firm size (cont.)

PANEL B: Cash flow sensitivity of cash holdings						
	Entire sample		Multiple equity issuers		Single equity issuers	
	Constrained	Unconstrained	Constrained	Unconstrained	Constrained	Unconstrained
	(1)	(2)	(3)	(4)	(5)	(6)
$CashHold_{i,t-1}$	-0.401***	-0.244***	-0.368***	-0.243***	-0.433***	-0.410***
	(-16.50)	(-10.84)	(-10.41)	(-8.566)	(-13.31)	(-8.927)
$\Delta Debt_{i,t}$	-0.334***	0.062	-0.316*	0.144	-0.210	-0.056
	(-2.629)	(0.921)	(-1.777)	(1.576)	(-1.198)	(-0.709)
$Cashflow_{i,t}$	0.194***	0.121***	0.181***	0.143***	0.212***	0.218***
	(12.90)	(3.280)	(8.930)	(3.006)	(9.186)	(3.234)
$Q_{i,t}$	0.005*	0.010**	0.005	0.004	0.002	0.015*
	(1.943)	(2.427)	(1.438)	(0.767)	(0.472)	(1.732)
$Size_{i,t}$	-0.021***	-0.006**	-0.024***	-0.002	-0.020***	-0.004
	(-5.452)	(-2.537)	(-4.272)	(-0.798)	(-3.813)	(-0.986)
Fixed effects:						
Industry	Yes	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes	Yes
Adj.R^2	0.294	0.141	0.283	0.133	0.420	0.267
N	1,625	1,499	867	1,010	6758	489

Table 4C (4.8) Cash flow sensitivity of debt and cash holdings for multiple and Single equity issuers: financial constraint proxied by dividend payout ratio

PANEL A: Cash flow sensitivity of debt						
	Entire sample		Multiple equity issuers		Single equity issuers	
	Constrained	Unconstrained	Constrained	Unconstrained	Constrained	Unconstrained
	(1)	(2)	(3)	(4)	(5)	(6)
$Debt_{i,t-1}$	-0.213***	-0.115***	-0.228***	-0.117***	-0.214***	-0.185***
	(-16.34)	(-5.804)	(-13.71)	(-3.628)	(-9.280)	(-6.761)
$\Delta CashHold_{i,t}$	0.039	0.110	0.071	-0.021	0.016	0.285*
	(1.065)	(0.791)	(1.383)	(-0.100)	(0.299)	(1.744)
$Cashflow_{i,t}$	0.014	0.016	0.008	0.171	0.016	0.010
	(1.211)	(0.244)	(0.522)	(1.237)	(0.741)	(0.129)
$Q_{i,t}$	0.001	0.004	0.004*	-0.005	-0.003	0.008*
	(0.848)	(0.926)	(1.946)	(-0.647)	(-0.998)	(1.775)
$Size_{i,t}$	-0.000	-0.003	0.002	-0.004	-0.005	-0.003
	(-0.641)	(-1.566)	(0.782)	(-1.291)	(-1.571)	(-0.947)
Fixed effects:						
Industry	Yes	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes	Yes
Adj.R^2	0.156	0.185	0.170	0.249	0.210	0.212
N	2,558	1,349	1,676	703	882	646

This table reports results of 3SLS regressions with year and industry fixed effects (equations 4.2 and 4.3) for debt issuance and cash holdings, following the approach of Acharya et al. (2007). Here, we make the distinction between constrained and unconstrained firms. As a proxy to identify (un)constrained firms we use the dividend payout ratio (dividends per share / earnings per share) of the issuing firm (per year). Results are reported for constrained and unconstrained firms for the entire sample of UK firms issuing equity during 1995-2015 (Columns 1 and 2) as well as the subsamples of multiple equity issuers (columns 3 and 4) and Single issuers (columns 5 and 6). Firms are considered multiple issuers if they issued equity more than once in the sample period. Panel A is for cash flow sensitivity of debt and Panel B for cash flow sensitivity of cash holdings.

Table 4C (4.8). Cash flow sensitivity of debt and cash holdings for multiple and Single equity issuers: financial constraint proxied by dividend payout ratio (cont.)

PANEL B: Cash flow sensitivity of cash holdings						
	Entire sample		Multiple equity issuers		Single equity issuers	
	Constrained	Unconstrained	Constrained	Unconstrained	Constrained	Unconstrained
	(1)	(2)	(3)	(4)	(5)	(6)
$CashHold_{i,t-1}$	-0.373***	-0.179***	-0.338***	-0.184***	-0.436***	-0.224***
	(-19.42)	(-9.730)	(-13.95)	(-6.867)	(-13.82)	(-7.898)
$\Delta Debt_{i,t}$	-0.262***	0.118	-0.205**	0.085	-0.299**	0.102
	(-3.063)	(0.919)	(-1.996)	(0.434)	(-2.033)	(0.915)
$Cashflow_{i,t}$	0.189***	0.111**	0.168***	0.341***	0.230***	0.083
	(14.27)	(2.277)	(10.39)	(3.709)	(9.653)	(1.348)
$Q_{i,t}$	0.003	0.002	0.004	-0.011**	-0.001	0.009**
	(1.385)	(0.509)	(1.329)	(-2.307)	(-0.327)	(2.526)
$Size_{i,t}$	-0.015***	0.003*	-0.015***	0.009***	-0.019***	-0.002
	(-7.276)	(1.926)	(-5.680)	(3.765)	(-4.712)	(-0.898)
Fixed effects:						
Industry	Yes	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes	Yes
Adj.R^2	0.244	0.141	0.225	0.264	0.367	0.184
N	2,558	1,349	1,676	703	882	646

Table 4C (4.9) Cash flow sensitivity of debt and cash holdings for multiple and Single equity issuers: financial constraint proxied by SA index

PANEL A: Cash flow sensitivity of debt						
	Entire sample		Multiple equity issuers		Single equity issuers	
	Constrained	Unconstrained	Constrained	Unconstrained	Constrained	Unconstrained
	(1)	(2)	(3)	(4)	(5)	(6)
$Debt_{i,t-1}$	-0.181***	-0.184***	-0.191***	-0.210***	-0.201***	-0.198***
	(-13.84)	(-13.28)	(-10.87)	(-10.80)	(-9.985)	(-9.405)
$\Delta CashHold_{i,t}$	0.052	0.160**	0.059	0.203**	0.058	0.031
	(1.442)	(2.107)	(1.143)	(2.042)	(1.181)	(0.291)
$Cashflow_{i,t}$	0.009	0.075***	0.005	0.088***	0.017	0.055
	(0.789)	(3.108)	(0.322)	(2.889)	(0.878)	(1.208)
$Q_{i,t}$	0.000	0.003	0.002	0.005	-0.002	0.001
	(0.232)	(1.188)	(1.125)	(1.406)	(-0.805)	(0.343)
$Size_{i,t}$	-0.001	0.000	0.000	0.000	-0.001	-0.002
	(-0.617)	(0.074)	(0.043)	(0.408)	(-0.519)	(-0.839)
Fixed effects:						
Industry	Yes	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes	Yes
Adj.R^2	0.149	0.133	0.172	0.179	0.188	0.159
N	2,685	2,601	1,532	1,509	1,153	1,092

This table reports results 3SLS regressions with year and industry fixed effects (equations 4.2 and 4.3) for debt issuance and cash holdings, following the approach of Acharya et al. (2007). Here, we make the distinction between constrained and unconstrained firms. As a proxy to identify (un)constrained firms we use the SA (size-age) index developed by Hadlock and Pierce (2010). We define firms with above median SA index score as constrained and below median as unconstrained. Results are reported for constrained and unconstrained firms for the entire sample of UK firms issuing equity during 1995-2015 (Columns 1 and 2) as well as the subsamples of multiple equity issuers (columns 3 and 4) and Single issuers (columns 5 and 6). Firms are considered multiple issuers if they issued equity more than once in the sample period. Panel A is for cash flow sensitivity of debt and Panel B for cash flow sensitivity of cash holdings.

Table 4C (4.9). Cash flow sensitivity of debt and cash holdings for multiple and Single equity issuers: financial constraint proxied by SA index (cont.)

PANEL B: Cash flow sensitivity of cash holdings						
	Entire sample		Multiple equity issuers		Single equity issuers	
	Constrained	Unconstrained	Constrained	Unconstrained	Constrained	Unconstrained
	(1)	(2)	(3)	(4)	(5)	(6)
$CashHold_{i,t-1}$	-0.352***	-0.267***	-0.332***	-0.276***	-0.388***	-0.297***
	(-19.46)	(-16.01)	(-13.29)	(-12.46)	(-14.93)	(-10.88)
$\Delta Debt_{i,t}$	-0.213**	0.079	-0.180	0.100	-0.014	-0.073
	(-2.031)	(1.289)	(-1.325)	(1.354)	(-0.102)	(-0.800)
$Cashflow_{i,t}$	0.196***	0.106***	0.173***	0.097***	0.243***	0.169***
	(15.61)	(5.407)	(10.59)	(3.919)	(12.18)	(4.501)
$Q_{i,t}$	0.004*	0.003	0.004	0.003	0.002	0.004
	(1.800)	(1.271)	(1.332)	(1.078)	(0.467)	(1.229)
$Size_{i,t}$	-0.018***	-0.003***	-0.019***	-0.002	-0.019***	-0.003
	(-8.032)	(-2.634)	(-5.888)	(-0.975)	(-5.543)	(-1.571)
Fixed effects:						
Industry	Yes	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes	Yes
Adj.R^2	0.247	0.149	0.233	0.165	0.367	0.189
N	2,685	2,601	1,532	1,509	1,153	1,092

Chapter 5. Conclusions

It is widely accepted that SMEs in the United Kingdom rely mainly on internal funds and partly on bank lending channels rather than market equity channels for their external financing needs. Frictions have long been prevalent in the bank lending channel especially for high risk equity financing as banks are heavily regulated with respect to risk-taking with depositors funds. Frictions have prevailed not only in bank lending channels but also in equity funding channels due to information asymmetry between firms and investors. We find evidence that supports our claim that the choice of Private Placements as an issuing device resolves the adverse selection problems faced by small and medium enterprises.

Recently, Private Placements (PPs) have dominated the Seasoned Equity Offering (SEO) landscape in the UK whereas Rights Issues had done so previously. While the SEOs have traditionally been the preserve of large firms, in the past decade, that changed in the UK.[80] The vehicle of change was London's Alternative Investment Market (AIM), which is a light touch, self-regulated equity market. While the vast majority of post-2007 SEO deals have involved AIM firms, some 82% of the latter are SMEs. AIM is attractive for SMEs as its SEO requirements and costs are considerably lower than those on the main market. Most of these SEOs are PPs in which tranches of new shares are placed with institutions and other sophisticated investors. Since firms issuing PPs are often distressed and thus financially constrained in terms of external funds, it is puzzling that

[80] The change discussed here might not have been present only the UK. However, in this study we focus in the UK, since one of the things we want to highlight is the importance of AIM as a platform for SMEs. AIM follows a light-touch regulatory approach that facilitates SMEs seeking listing, due to the less strict listing requirements and lower costs compared to the London primary main market.

sophisticated investors and institutions choose to participate. We investigate this puzzle extensively. Typically, firms involved in PPs (and in particular listed SMEs issuing equity privately) have exceptionally high growth prospects, their shares are undervalued relative to their fundamentals, and they leave money on the table. The basic thesis is that these factors explain the attraction of institutional investors for PPs in general and also PPs by SME firms. We scrutinise the thesis from three perspectives and conduct empirical tests to gather evidence to help point towards a conclusion.

Firstly, we investigate the use of proceeds by firms that employ PPs and study their valuation and growth characteristics as well as the role of financial institutions in supplying the equity. We propose a new approach that explains salient aspects of firms engaging in PPs, while estimating misvaluation and growth from a well-established decomposition of the market-to-book ratio. Secondly, the stock market reaction to the raising of finance is evaluated, around the issue date in the short term, employing Cumulative Abnormal Returns (CARs), and for long term horizons up to three years starting around the issue date, employing Buy and Hold Abnormal Returns (BHAR). Finally, we observe that many firms listed on the AIM as well as many SMEs raise equity finance through repeated SEOs. We, therefore, investigate the impact on leverage of firms raising equity through multiple SEOs.

We conducted the following investigations to gather evidence. Specifically, we evaluated the

i) impact of growth prospects and misvaluation on the different uses of proceeds raised via Private Placements and other means. We examined the

role of misvaluation and growth, employing a sample of 2,860 UK PP and public SEO deals during the 1994-2014 period and a modified version of the methodological approach of Rhodes-Kropf et al., (2005) to decompose M/B ratios into two misvaluation components and a long run growth component.

ii) differential stock market reactions to Private Placements, in the short (CARs) and long term (BHARs). In addition to growth and misvaluation, we investigated the effect of markets, the level of discounting and, for those firms that raise equity multiple times, the difference between the first and the follow-on SEOs. We evaluated performance on a sample of 2,793 UK deals that raised equity capital during 1995-2015, with a focus on SMEs listed on the AIM.

iii) impact on the capital structure of those firms that raise finance in multiple SEO events while paying specific attention to the sensitivity of the level of debt and cash holdings following an infusion of new cash. We explored whether issuing equity multiple times has an impact on the firm's capital structure. We examined whether multiple equity issuers tended to have lower leverage and whether their changes in capital structure differed between AIM and MM.

AIM firms are on average small companies (SMEs) and considered more risky than firms listed on the MM. Thus, access to debt financing may be challenging for AIM firms, leading us to our conjecture that AIM firms may need to raise equity frequently to raise financing for their corporate needs.

Further, we investigated the sensitivity of debt and cash holdings to changes in cash flow for both multiple and single equity issuing firms.

In chapter 3, we restrict attention to only publicly listed SMEs to ensure we have reasonable measures of equity misvaluation. While this restriction ensures suitable measures of misvaluation, since the vast majority of SME are private unlisted firms, our study will not naturally be representative of economy-wide SMEs. Conclusions with respect to SMEs are offered with the caveat that, from our sample of firms, they can be generalised for the population of publicly listed SMEs.

Empirical findings:

Our main empirical findings are that for firms raising finance via PPs, misvaluation significantly increases the use of proceeds towards subsequent purchase of assets while growth has a similar effect only on R&D. The reaction of the stock market in the short term is positive for PPs. Whilst most previous studies report significant long-term underperformance, we find no such evidence for SMEs, PPs and SMEs' PPs.

While there is a general preference to increase cash holdings using proceeds from SEOs, we find some differences in the behavior of multiple and one-off equity issuers. Our findings indicate that overall multiple issuers tend to change both their cash and debt positions, whereas single issuers change only their cash position. When we distinguish firms listed on AIM and MM, we find that multiple as well as single issuers listed on the MM change both their debt and cash positions when there is an increase in the cash flow. In contrast on the AIM, multiple and single issuers change only their cash holdings.

The detailed results reveal that PPs and other SEOs differ significantly both in terms of

the overall M/B ratios and the three components of its decomposition. Furthermore, we find that overvalued firms engage in SEOs by issuing equity to take advantage of their overvalued stock. Thus, they can obtain financing on better terms compared to times when their stock is undervalued or correctly valued, without necessarily possessing growth options. On the other hand, PP issuers are on average undervalued firms and have high growth prospects. We conclude that this constellation of results helps explain why such firms are attractive to sophisticated buy-side institutions such as investment funds and financial institutions and to sell-side institutions such as underwriters and investment banks that sell placement services to firms. The rationale is that generous discounts on PPs could more than cancel overvaluation. If firms are undervalued, then PPs enable sophisticated investors to acquire such firms' shares cheaply and even more cheaply if a discount is further applied to their undervalued shares.

The findings related to the post-issue uses of proceeds show that the more misvalued the PP firms, the more they invest in total assets and capital expenditures but not R&D. By contrast Hertzel and Li (2010) find that growth prospects are the main driver of these uses of proceeds and that misvaluation is insignificant. For firms raising equity using RIs or OOs, misvaluation seems to be associated with changes in total assets occurring in the aftermath of the deal. This evidence helps us conclude that undervaluation is the main driver of the post-issue use of proceeds for change in total assets and capital expenditures by PP firms. Our warrant is that expensive equity capital stemming from undervaluation induces firms to make rational long-term investment choices.

We find that the majority of UK SEOs take the form of private placements (PPs) of equity

while approximately 69% of all deals are conducted by firms listed on AIM. SMEs conduct some 82% of AIM PPs. AIM was established in 1995 as a lightly regulated platform designed mostly for small, young, high growth and innovative firms that were either unable or unwilling to meet the more stringent regulatory criteria for listing and engaging in follow- on fundraising on the main market (MM).

New light is shed on the role of external equity financing in mitigating the funding gap that SMEs have historically experienced in the UK. We argue that the equity markets have played a leading role in the funding of SMEs and highlight the role of the Alternative Investment Market (AIM). We find that while the conventional thinking in the literature suggests SMEs have relied mainly on bank lending channels for their external financing needs and SEOs have been the remit of large companies, our findings suggest that the AIM equity channel was in fact prominent in smoothing out the financing frictions in the bank lending channels. The vast majority of the post-2007 SEOs are by SMEs that listed on AIM, not the Main Market. Furthermore, we show that listed SMEs accounted for 66% of all SEO over the course of our sample period.

Around 92% of AIM deals take the form of PPs. SMEs issuing via PPs differ in three important respects from those on MM. They enjoy much higher growth prospects, are more undervalued relative to their fundamentals and are more underpriced. We argue that our results can explain why institutional investors are willing to participate in the financing of such high risk firms that impose adverse selection and agency costs on them. We conclude that PPs allow firms to alleviate part of the information asymmetry of public offers through the conventional dimensions of greater private disclosure and underpricing of the offer, as well as the higher growth and undervaluation we uncover

in this study.

These results indicate that AIM SMEs that place their equity privately with financial institutions on average enjoy very high growth prospects and offer their shares at a discount to their market price by leaving money on the table. We are justified to conclude that the underpricing sufficiently compensates investors for the adverse selection costs they bear since the market reaction to PPs is positive around the issue date. Furthermore, since the market value of SMEs engaging in PPs is below their fundamental value, there is an additional incentive for sophisticated investors: they obtain a double discount when they invest in such placements. We conclude that the choice of PPs as an issuing device resolves information asymmetry problems faced by financial institutions when deciding to express interest to the book runner managing SEOs. The deep discount and undervaluation coupled with growth prospects serve to compensate the buy-side institutions for the adverse selection costs when investing in the equity of SMEs. The positive short term stock market reaction to PPs suggests that there is a certification effect when a PP issue is confirmed. Furthermore, we find that the long term abnormal performance (BHAR) is insignificant ex-post while significant ex-ante the equity issue.

We find that 65% of sample firms issued equity more than once during the period 1995-2015. From these multiple issuers, 62% are AIM firms. On average, AIM firms issue equity 5.04 times while MM firms 4.15 times, a difference which is found to be statistically significant. In addition, multiple equity issuing firms have higher leverage and growth and lower short-term to total debt ratio on average compared to one-off issuers. These findings imply that multiple equity issuers do not use additional funds

from issuing equity to reduce their debt.

Next, we study the cash flow sensitivity of debt and cash holdings for multiple equity issuers, single equity issuers, firms listed on MM and AIM, and firms with or without financial constraints. Our results show that both multiple and single equity issuers increase their cash holdings when there is an increase in the cash flow. Multiple equity issuers change their debt positions when there is an increase in cash flow. Finally, multiple and single equity issuers, both constrained and unconstrained, increase their cash holdings when cash flow increases. However, only constrained firms issuing equity repeatedly change their debt positions when there is a cash flow change.

Regarding multiple issuers, we contribute to the SEO and capital structure literatures in two ways. While repeated issuing of equity can be expected to confer upon firms the opportunity to reduce leverage, we find that they do not do so. Our study provides new evidence that the leverage of multiple issuers of equity is higher than that-of single issuers.

Furthermore, the increase in cash flow affects differently the sensitivity of debt and cash holding for multiple and single-equity issuers. There is a difference between MM and AIM listed issuers in their response to cash flow increases. Both multiple and single issuers listed on the MM change their debt and cash positions when cash flow increases. In contrast the AIM listed issuers (both multiple and single issuers) only change their cash holding when cash flow increases.

Overall, given the evidence gathered, we are able to conclude that small and medium sized enterprises involved in Private Placements possess high growth prospects, that

their shares are undervalued relative to fundamentals, and finally that they leave money on the table in the SEO. Hence, our basic thesis is supported that these factors help explaining the attraction to institutional investors of participating in Private Placements of the equity of small and medium enterprises. The increasing preference for and popularity of Private Placements among firms seeking equity is likely explained by the certification effect associated with financial institutions receiving private information about the firm during the SEO process. The positive abnormal returns around the equity issuing date are supportive of a certification effect being perceived by the market. Furthermore, we find no evidence of significant underperformance in the three years following the issue date.

The willingness of financial institutions to accept the equity of these firms, despite their higher risk profiles and potential adverse selection costs, is explained by the undervaluation of the issuing firms and the further discounts at which the issuers' shares are sold to these institutions. Our finding that Private Placements have become the preferred issuing mechanism compared to Rights Issues and Open Offers among the new, small and high growth firms, suggests that a light-touch privately regulated exchange such as the Alternative Investment Market may have alleviated frictions in the equity funding channel and helped address the so called small firm financing gap. While the financing gap may not have narrowed, it appears that the gap may have been wider without the AIM and private placements.

One of the important points raised in this study is the role of AIM as a platform facilitating listing and raising of financing for small and young firms that they are considered, on average, riskier than larger and more established firms. In Chapter 3 of

this study we find that AIM firms are more undervalued, have higher growth prospects and issue equity in larger discounts than firms listed on the main market. Also, we find that AIM firms issue, on average, equity more frequently than MM firms (Chapter 4). Firms issuing equity multiple times (multiple issuers) have higher leverage than single issuers according to our findings. So, while investing in equity of AIM firms can have advantages (high growth prospects, discounts and undervaluation), it can also be risky given the higher leverage of multiple leverage and the lower profitability compared to single equity issuers.

AIM, and its light-touch regulatory approach, has received both positive comments as well as severe criticism, as discussed in more detail in Chapter 3. However, a point that is often missed is that it is not the platform per se that is good or bad for the investors and the wider economy, but how this platform is used and by whom. Under this perspective, the role of regulation appears to be of paramount importance. Regulatory extremities are rarely beneficial for investors and the market. That is, having no Alternative Investment Market (AIM), or any similar market, would be a disadvantage for SMEs seeking listing and financing; but at the other side of the spectrum, having a loose regulatory framework which allows almost all firms to get listed, enter the market and start raising financing from investors is equally precarious. Especially in the light of the recent financial crisis, protection of investors and the stability of the economy as a whole have been the primary focus of regulators. Under the post-crisis umbrella of regulatory changes that have been implemented, markets like AIM should not be left out. Regulators should revisit the role of AIM, its importance and the target group of firms and investors it attracts and take measures to prevent potential failures happening

because of high adverse selection and a loose regulatory safety net as per the criteria by which firms are being accepted on AIM. For example one important point regulators could focus on is the role of the Nominated Advisors (NOMADs), who are the ones who help get the firms listed in the first place. NOMADs check the quality and eligibility of a firm willing to join AIM and ensure compliance with AIM rules, but they are employed by the firm itself, which creates a conflict of interest. The role of NOMADs and other factors related to AIM and regulatory changes that could improve the quality of AIM can be considered in future research.

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