Does Quality Signalling and Mispricing Explain the Choice and Long-term Impact of Seasoned Equity Offering Methods?

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Abstract

SEOs in the UK provide valuable choices to the issuer in terms of renounceability and control dilution. We analyze a large UK sample that captures five major SEO types: rights offerings, open offers, open offers with private placements, standalone placements, and accelerated offers. We find that high quality firms (low risk, high liquidity, low information asymmetry) are more likely to issue to existing shareholders. We also find that tradable issues have higher takeup and if a firm decides to issue to non-existing shareholders, such firms with high information asymmetry tend to select standalone private placements. We find support for various market reaction hypotheses: (a) a negative relation between the discount and the announcement period abnormal return; (b) price reaction is more favorable for combined open offer/private placements and fixed-price private placements (rights offerings and open offerings), when issues are made with a lower (higher) discount; (c) positive relation between shareholder takeup and announcement period abnormal return; (d) firms issuing to (internal) external shareholders (do not) experience long-term underperformance; (e) firms issuing to internal shareholders do not experience long-term underperformance irrespective of discount; (f) firms issuing to external shareholders with larger discount experience larger long-term underperformance; and (g) long-term underperformance is lower for the issues made by liquid firms.

JEL classification code: G14, G32

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Introduction

By focusing on quality signaling, adverse selection, renounceability, and control aspects, we provide new empirical evidence and further insights on the choice of seasoned equity offerings (SEOs). We use a large sample drawn from the UK market that captures five major SEO types: rights offerings, open offers, open offers with private placements, standalone placements, and accelerated offers. These SEO variants provide a wide-range of underlying characteristics that credibly elicit alternative managerial behavior, thus creating a potent framework upon which our key hypotheses are formulated. We are particularly interested to know the factors that determine different types of SEOs. We also examine how the market reacts to the announcement of different SEO types and the associated long term returns.

There are several ways in which the menu of SEO alternatives available in the UK market provides research leverage. First, in stark contrast to the US, public offerings—known as firm commitment offers—are rare in the UK (see, Barnes and Walker (2006, p. 60)). Second, rights offerings in the UK are renounceable, which allows existing shareholders who do not wish to take up their entitlement of new shares to sell part or all of their rights in the issue. In contrast, open offers in the UK are non-renounceable and, thus, do not permit shareholders to sell the rights.[1] Once again, in contrast to the US, these rights offering-type SEOs are relatively common in the UK. Third, a standalone share placement is a non-rights method of flotation in which shares are issued to institutional investors and other outside investors, but not the general public. After removal of the size restrictions on placements by the London Stock Exchange (LSE) in January 1996, this form of placement has become the most common SEO method in the UK.[2]

Prior studies, like Heinkel and Schwartz (1986), Eckbo and Masulis (1992), and Balachandran et al. (2008), argue that the choice of equity issue method can be used as a

[1] It should be noted that open offers differ from non-renounceable rights offerings in Australia (see Balachandran et al. (2008)). Shares are placed with institutional investors by verbal agreement before the offer is announced, in the majority of UK open offers, but existing shareholders retain the right to subscribe in proportion to their current holdings (known as clawback).

[2] British firms use either accelerated book-building placements to institutional investors or fixed-price private placements. The issuing firms of fixed-price private placements or accelerated book-building placements are not required to prepare or distribute a prospectus.

signaling device. For example, Eckbo and Masulis (1992) argue that managers and shareholders possess asymmetric information with regard to firm value, which influences expectations about the willingness of existing shareholders to participate in equity offerings, thereby determining the method of flotation. Heinkel and Schwartz (1986), Eckbo and Masulis (1992) and Balachandran et al. (2008) all ignore the role of share placement to institutional investors as a method of raising seasoned equity. Such an omission is likely to induce a skewed set of inferences, since it fails to capture the interplay of factors that fundamentally influence manager decisions between rights-type versus non-rights methods of equity financing.

We classify SEO methods in a dichotomous fashion in terms of the opportunity to subscribe by existing shareholders (rights offerings and open offers) and other issues with the opportunity for non-existing shareholders to participate. We estimate a nested logit model and we find that high quality firms are more likely to issue to their existing shareholders. More specifically, we find that firms issuing to existing shareholders have lower idiosyncratic risk, higher liquidity, and lower information asymmetry. We further model the choice between issuing rights that are tradable and non-tradable, in which tradable rights are expected to generate adverse selection costs when sold by current shareholders to outside investors. We find that tradable issues have higher takeup, which is in line with the argument of Eckbo and Masulis (1992) that takeup reduces high adverse selection costs. If a firm decides to issue to non-existing shareholders, we find that firms with high information asymmetry select a standalone private placement, in line with the low number of investors in these issues reducing information production costs.

We further study announcement effects. A number of studies document positive price reactions to the announcement of private placements.[3] Slovin et al. (2000) and Barnes and Walker (2006) study UK offerings and focus on rights offerings (renounceable) and fixed-price

[3] See Wruck (1989), Hertzel and Smith (1993) and Barclay et al. (2007) in the US and Cronqvist and Nilsson (2005) in Sweden. The positive price reactions are rationalized in terms of a monitoring hypothesis (Wruck (1989)), a certification hypothesis (Hertzel and Smith (1993)) or a managerial entrenchment hypothesis (Barclay et al. (2007)). Dann and DeAngelo (1988) and Wruck (1989) find some evidence consistent with this entrenchment rationale.

placements, in which an underwriter acquires shares directly from an issuing firm and sells shares to outside investors. Slovin et al. (2000) find a positive announcement period price reaction in the UK during the period prior to the removal of the ceiling on proceeds (1986–1994), whereas there is a negative reaction for rights offerings. They argue that, as placements entail the sale of shares to outside investors, there is a decline in ownership concentration, which enhances the potential for external monitoring and corporate control activity, concluding that the option to conduct private placements enhances the ability of firms to signal their quality. Barnes and Walker (2006) find a positive (negative) announcement date price reaction for fixed-price placements (rights offerings) for the period 1989–1998.

Our predictions on announcement effects take price discounts into account. We argue that high-quality firms will predominantly use a lower price discount. We further predict that when companies offer SEOs with a lower price discount, the price reaction will be stronger in the case of a standalone fixed-price private placement and of a combination of open offers and private placements, than for other forms of equity issues to existing shareholders, due to the additional implication of greater monitoring potential and of control dilution in the case of private placements. By contrast, low-quality firms will predominantly use a larger discount, irrespective of the equity issuance mechanism selected. The low-quality signal that derives from the larger discount predicts a negative market reaction in all cases. However, the market reaction will be less unfavorable for rights issues and open offers since these two issuing techniques have less dramatic implications in terms of the destruction of existing shareholder wealth.

Our results show that the price discount robustly reflects the quality of the issue. The price discount is positively related to idiosyncratic risk (a proxy for inverse quality, see Balachandran et al. (2008)) for each of the categories of SEOs investigated. Overall, the market reaction is significantly more favorable for announcements by the lower discount group than for the larger discounts. We find that the market reacts in a strongly positive fashion to the announcement of standalone private placements with fixed prices and combined open

offer/private placement SEOs (compared to rights offerings and open offers) when companies make these issues with lower price discounts. This result also supports the notion that fixed-price private placements to institutional investors enhance external monitoring and corporate control activity, in addition to quality signaling. In contrast, the market reacts strongly and negatively to announcements of standalone private placements with fixed prices, standalone placements with accelerated book-building, and combined open offer/private placements (compared to rights offerings and open offers) when companies make these issues with higher price discounts indicating that the market is averse to seasoned equity issuance to institutional investors with a larger price discount.

The impacts of mispricing on equity issues has been extensively analysed and empirically assessed in the corporate finance literature. In their survey of CFOs, Graham and Harvey (2001) found that mispricing, in particular overvaluations, had an important impact upon the issuance of equity and, indeed, in an early study of this phenomenon in the UK, Marsh (1972) provided empirical support for this contention. The mispricing of equity in the period prior to the equity issue can occur in situations when investors suffer from cognitive biases. For example, where investors are overconfident, such investors will tend to overreact to the information contained within their private signals. These overreactions to private signals on their part will lead to overvaluations when the private signals, for example, relate to their overly optimistic future growth projections. When the public announcement of the SEO is made, the market will underreact to this public signal, reversing, to a degree, the overpricing that had occurred in the pre announcement period. However, since this is an underreaction, the overvaluation will not be fully corrected and there will be a continuing mean reversion towards intrinsic values over the post announcement period. In the context of the internal versus external equity issuance dimension, the lower information asymmetry in the case of internal issues would mitigate the extent to which such overvalued issues could be made and the post announcement mean reversions.

We also provide evidence on long-term market reaction, supporting a range of hypotheses. Specifically, we find that: (a) firms issuing to (internal) external shareholders (do not) experience long-term underperformance; (b) firms issuing to internal shareholders do not experience long-term underperformance irrespective of discount; (c) firms issuing to external shareholders with larger discount experience larger long-term underperformance; and (d) long-term underperformance is lower for the issues made by highly liquid firms.

Our study seeks to enhance and extend the literature in a number of critical ways. First, we examine a much larger sample of SEOs encompassing a rich and complete spectrum of the major methods, ranging from rights-type issues through to standalone placements. As such, we fill a gap left by prior UK studies. Second, our placement subsample comprises cases of accelerated book-building as well as fixed-price placements, thus allowing us to examine the potential for signaling variation via the pricing method. Third, we model expected shareholder takeup (Eckbo and Masulis (1992) and Balachandran et al. (2008)) and show that it is an important force underlying the choice of SEO type in the UK. Fourth, we analyze the impact of ownership concentration and the private benefits of control on the choice of an SEO method. Fifth, our analysis is very comprehensive in the sense that we report issue choice decisions, announcement effects, and long term returns.

This paper proceeds as follows. Section I briefly discusses the alternative flotation methods of seasoned equity offering. Hypotheses and the results of previous empirical studies are discussed in section II. Section III outlines the sample and methodology. In Section IV, we analyse the factors that drive the choice of alternative types of seasoned equity offerings using nested logit model. Section V presents the empirical results using standard event study methods and cross-sectional regression analyses. Section VI investigates the long term reaction to SEOs. Finally, our conclusions are presented in Section VII.

I Seasoned Equity Offerings Methods in the UK

Investors in UK companies have been protected from the dilution of their ownership stake through pre-emption rights. However, the conditions surrounding the pre-emption rights have been steadily eroded through time thereby giving issuing companies greater degrees of freedom with regards to the issue process. Since 1996, UK firms have been able to make non-pre-emptive placings as long as they are approved by the companies' stockholders. Since 2000 a firm may waive pre-emptive rights twelve months in advance of the placing without a prospectus for placings up to 10% of their share capital.

UK companies use rights offerings and open offers to raise equity from existing shareholders. Rights offerings in the UK are renounceable, which allows existing shareholders who do not wish to take up their entitlement of new shares to sell part or all of their rights in the issue. Rights offering in the UK are usually insured by underwriters. An open offer is also an offer of new shares made to existing shareholders on a pre-emptive, pro rata basis to their existing holdings. However, an open offer differs from a rights offering in a number of key respects. Open offers in the UK are non-renounceable and, thus, do not permit shareholders to sell the rights; any shares not taken up by the existing shareholders in open offers are bought by the placees (institutional investors), as arranged prior to announcement of the issue. The shares that are not subscribed to by existing shareholders are taken up by an underwriter to the rights offering and by placees in open offers. Shareholders who do not take up their entitlement to acquire new shares in the open offer effectively lose the discount to the pre-announcement price at which the open offer is made. Because of the absence of any mechanism for shareholders to monetize the value of this discount, new shares can only be offered at a maximum of discount of 10 percent without shareholders approval. However, there is no limit on the discount for rights offerings. The non-pre-emptive issues have also an upper limit of 10% on the discount permitted by UK listing rules. The minimum offer period is 21 business days for rights offerings and 15 business days for open offers.

There are three main methods for UK companies to issue new shares to non-existing shareholders: standalone private placements (SPPL), combinations of open offers and placements (OOPPL), and accelerated book-building placements (ABPL). In the case of a standalone private placing, shares are placed with institutional investors. In this method companies enter into an agreement with an investment bank or broker who agrees to procure placees. The SPPL method is similar to bought deals in the US (see Slovin et al, 2000). In our sample, 53% of the SPPL cases have more than 10% of equity raised relative to existing share capital. The OOPPL method is a combination of open offers and a placement. In this method, the underwriter or lead manager purchase new issue shares from the firm, a proportion of which are 'placed firm' with institutions as in a straight PL, the remainder are conditionally placed with institutions subject to a claw-back by qualifying shareholders.

In our sample, virtually all OOPPL cases have more than 10% of equity raised relative to existing share capital. In the ABPL method in the UK, shares are marketed in a single dealing day following the issue of a press release giving details of the proposed share issue and the reasons for it. The book-building method establishes a single price payable by placees at the end of the process. Persons who are eligible to participate in the accelerated book-building method communicate their bid by telephone. Oral confirmation of the allocation of shares by the manager will constitute a legally binding commitment on placees to acquire the number of shares allocated to them. In our sample, only 15% of the ABPL events have more than 10% of equity raised relative to existing share capital.

II Theory and hypothesis development

A Issuance choice hypotheses

The selection of the seasoned equity issue method type will depend upon a number of differing criteria and dimensions. The signalling framework is a popular and insightful approach to gauge the relative importance of various alternative factors driving these issue type decisions. That is, in selecting their issue type, corporate managers will select that issue type that most

appropriately signals firm value (see Myers and Majluf (1984), Heinkel and Schwartz (1987), Eckbo and Masulis (1992), for example). Within a signalling approach to issue choice, phenomena such as information asymmetry and firm quality proxies will be important explanatory variables. Furthermore, the subscription price discount will be an important signalling device (Slovin et al (2000)). That is, higher subscription discounts will provide negative quality signals.

When making a seasoned equity offering, managers need to determine whether the issue should be made to existing or to new shareholders. Myers and Majluf (1984) assume that managers act in the current shareholders' best interest and assume information asymmetry between managers and investors. A decision to issue equity to outside investors in their model is a negative signal on firm value. This adverse selection problem does not apply when the offering is sold to current shareholders. This leads to the following hypothesis:

H1: *Seasoned equity issues are more likely to be made to existing shareholders by high quality firms.*

If a decision has been made to issue to existing stockholders, it is necessary to determine whether the issue should be tradable or not. Tradable rights generate substantial adverse selection costs when sold by current shareholders to outside investors. In fact, Eckbo and Masulis (1992) argue that from an outsiders' point of view, a rights issue to which current shareholders do not subscribe is equivalent to a sale of stock to the public in a world with asymmetric information. They state that adverse selection costs are reduced in direct proportion to the degree of current shareholder takeup. This leads to our second hypothesis:

H2: *Seasoned equity offerings to existing shareholders that are tradable will have higher expected takeup than issues that are not tradable.*

If a decision has been made to issue to new shareholders, it is necessary to choose one of three available issuing alternatives. Wu (2004) argues that standalone private placements involve on average the lowest number of investors, and as such involves the lowest amount of information

production costs. Firms with high information asymmetry are as a result expected to reduce information production costs by issuing their equity in a standalone private placement. This leads to the following hypothesis:

H3: Seasoned equity offerings to new shareholders are more likely to be a standalone private placement when information asymmetry is high.

B Quality Signalling hypotheses

To minimize the expected costs associated with an offer that fails, a manager who assesses a higher probability of a stock price fall over the offer period will generally select a lower issue price. Hertzel and Smith (1993) argue that private placement discounts are strongly related to their proxies for information costs, and they interpret this as implying that buyers are compensated for information production and value certification. Balachandran et al. (2008) and Slovin et al. (2000) find that the price discount is negatively related to price reaction for rights offerings. Balachandran et al. (2008) argue, with empirical support, that lower idiosyncratic risk is a proxy for higher-quality firms, and such firms tend to set lower price discounts. Effectively, a lower issue discount will provide a quality signal

In the context of information asymmetry, Myers and Majluf (1984) develop a model that predicts that equity issues are perceived by the market as negative signals (i.e., signals of firm over-valuation). They also suggest that undervalued firms with limited internal funds would have incentives to forego positive NPV projects, and not issue new equity, in circumstances where the wealth of existing shareholders would be diminished otherwise. Hertzel and Smith (1993, p. 461) argue that managers with favorable information, who, under the Myers and Majluf (1984) assumptions, would not issue equity to the public, may resort to making a private placement, rather than foregoing a profitable investment opportunity. Even if underinvestment is not a problem, they show that undervalued firms will choose private placement over a public issue if doing so enables existing shareholders to retain a larger fraction of the firm. Hertzel and Smith (1993) conclude that their findings are consistent with the role of private placements as a

solution to the Myers and Majluf underinvestment problem and with the use of private placements to signal undervaluation.

Wruck (1989) argues that active investors purchase private placements to the extent that such investors are motivated by monitoring and control objectives. Slovin et al. (2000) argue that the option to conduct fixed-price placements rather than rights offerings in the UK enhances the ability of firms to signal their quality and to use a SEO to reduce ownership concentration (given that public offerings are rare in the UK). Barclay et al. (2007) suggest that private placements can be made to passive investors, thereby helping management to solidify control over the firm. We argue that this is a possibility in the case of fixed-price private placements to institutional investors in the UK. Moreover, information production costs are higher for firms using the book-building method compared to its fixed-price counterpart, as firms choosing the former variation undertake more complicated and detailed processes, such as analyst briefings and/or presentations to institutional investors to achieve issue success. In the context of IPO issuance in Japan, Kutsuna and Smith (2004) argue that book-building centralizes information production and provides more information to investors, and at a lower cost. In addition, there is an uncertainty associated with the placement price before book- building closes. Thus, it is plausible to argue that managers will more safely find "compliant"/"friendly" or more passive institutional investors in the "pre-marketing" phase by choosing a private placement with fixed-price, rather than a placement with book-building.

Synthesizing all these arguments, we can conclude that, other things equal, firms will more likely select placements rather than rights issues to signal their quality, and that this signal is more effectively achieved with fixed price rather than book-building, and at a lower discount. With large discounts, however, rights become preferable since existing shareholder wealth is more protected in this less favorable signalling environment. Accordingly, we propose the following set of related hypotheses:

H4(a) *High-quality firms will use lower issue price discounts, and a negative relation will prevail between the issue price discount and the announcement period abnormal return, irrespective of the SEO mechanism employed.*

H4(b) *Price reaction will be more favorable for combined open offer/private placements, and fixed-price private placements than for rights offerings, open offers, or placements with book-building, when issues are made with a lower discount.*

H4(c) *Price reaction will be more favorable for rights offerings and open offerings than for other SEO methods when issues are made with a larger discount, as other methods will destroy existing shareholder wealth.*

The importance of expected shareholder takeup in the choice of issue method is emphasized in a number of papers (for example, Eckbo and Masulis (1992); Bohren et al. (1997); and Balachandran et al. (2008)). Eckbo and Masulis (1992), for example, argue that managerial choice of the issue method will maximize the net benefit of the issue, conditional upon expected current shareholder takeup. Slovin et al. (2000) demonstrate that high shareholder takeup mitigates the negative share price response to underwritten rights issues in the UK. We extend the impact of shareholder takeup to rights issues, open offers and combination open offers/private placements in this study. The quality signals implicit within shareholder takeup suggest that higher shareholder takeup in firms with rights issues, open offers and combination open offers/private placements should be asscoaited more favorable price reactions. Therefore, we propose the following hypothesis:

H4(d) *A positive relation between shareholder takeup and announcement period abnormal return will prevail.*

C Mispricing/ Overvaluation hypotheses

A number of studies using US data document that firms' stock returns performance deteriorate following firm commitment offerings and private placements (see for example, Spiess and

Affleck-Graves (1995), Loughran and Ritter (1995, 2000), and Jegadeesh (2000) for findings of poor stock return performance for firm commitment offerings; and Hertzel et al. (2002) for private placements). Ritter (2003) shows that SEO firms underperform various benchmarks by about 3.5% per year in the 5 years subsequent to issuance. Loughran and Ritter (1995) argue that managers can create value for existing shareholders by timing financing decisions to exploit mispricing caused by market inefficiencies and this is supported in the CFO survey by Graham and Harvey (2001). That is, for example, overconfident investors will tend to overreact to their private signals or analyses thereby inducing a mispricing in the pre event period. Hertzel and Zhi (2010) find that firms with greater growth opportunities invest more in capital and have R&D expenditure after issuance, but do not experience lower post-issue stock returns whereas issuing firms with greater mispricing tend to decrease long-term debt and/or increase cash holdings, and do earn lower returns. They argue that their findings are consistent with behavioral explanations for post-issue stock price underperformance. Due to the lower information asymmetries in the case of internal issues, the likelihood of overvalued issues being feasible is reduced relative to external issues, where the information asymmetry is higher. As a consequence, the continuing price correction in the post announcement period after the underreaction to the public announcement will be lower for internal issues. Furthermore, since the post announcement price reactions will be related to the mispricing of the stock prior to the issuance, the magnitude of these reactions will be positively related to the extent of mispricing in the period prior to issuance and negatively related to the price reaction in the announcement period, since, in the latter case, the correction of the prior mispricing has been partially corrected via the underreaction to the public signal. Prior research does not examine the role of the issue price discount, issuance to existing versus external shareholders and liquidity on long-term underperformance. Accordingly, we predict the following:

H5(a) Firms with issuance to external (internal) shareholders will (will not) experience long-term underperformance.

H5(b) The magnitude of the post announcement price reaction will be positively related to the pre event mispricing, ii) negatively related to the announcement price reaction, with the relationships stronger for external issues.

H5(c) Long-term underperformance will be lower (higher) for issues made by more (less) liquid firms.

III. Data

A Sample

Seasoned equity offerings announced from 1996 to 2005 by British public companies listed on the London Stock Exchange (LSE) constitute our primary source data. We cease collecting offerings in 2005 as we require stock returns in the years after the offering for our analysis of long-term performance. We use the Bloomberg database to identify British public companies that raise seasoned equity via rights issues, open offers, standalone placements, a combination of open offers/placements and accelerated book-building placement offerings. Through Datastream we obtain daily share price data for each company one year prior to its SEO announcement through to the day after the announcement. Datastream is also used to source (at the balance sheet date immediately prior to the SEO announcement) the firm's leverage ratio (both total debt to total assets and long-term debt to total assets), book value of equity, and total assets, and market capitalization. Book-to-market ratio is defined as the book value of total assets to the market value of total assets (total assets – book value of equity + market value of equity) at the balance sheet date immediately prior to the SEO announcement. Shareholder takeup, the percentage of "pre-renounced" shares, offer proceeds, the subscription price, underwriter information and other information on each issue are obtained from the Bloomberg database.

Blockholder ownership data are hand-collected from The Macmillan Stock Exchange Yearbook (1995-1999) and from The Waterlow Stock Exchange Yearbook (2000-2007).

Initially, we identify a sample of 2,342 SEOs. From this group we exclude those issues announced simultaneously with restructurings, repurchases, stock dividends, stock splits, public offerings, convertible bonds, convertible preference shares, warrants, blockholder placements and rights issues of option announcements. Details of these sample exclusions are provided in Panel A of Table I. Our final total uncontaminated sample size is 967. Panel B of Table I provides a breakdown of the sample across different SEO types and shows that we identify a clean sample of 227 rights offerings (RO), 251 open offers (OO), 191 combined open offers/ placements (OOPPL), 233 standalone placements (SPPL) and 65 accelerated book-building placements (ABPL).

[Table I about here]

B Descriptive Statistics

Table II reports some basic univariate descriptive statistics for our sample. In Panel A, we present sample mean and median values of key economic variables for two main groups: seasoned equity offerings to existing shareholders [which we label "internal SEOs"] versus seasoned equity offerings to institutional investors or combination of institutional investors and existing shareholders [which we label "external SEOs"].[4] In Panel B of the same table, similar descriptives are given across five sub-groups of SEOs: RO, OO, OOPPL, SPPL and ABPL. The table also documents some basic non-parametric univariate tests (Kruskal-Wallis [KW] and Mann Whitney [MW]) for the difference in median values across sub-groups.

The variables that we examine are: Market value (MV); natural logarithm of market value (LMV); idiosyncratic risk (IDYRISK); proportionate bid-ask spread for a period prior to the announcement date (PBAN1YR); Price discount (DISC); Total debt/ total assets (TDTOTA);

[4] In this context, the label "external" indicates that at least some external investors (i.e. non-existing stockholders) are party to the SEO, but that the SEO is not necessarily exclusively for externals.

Long-term debt/ total assets (LDTOTA); Offer proceeds (OP); offer proceeds to market value (OPTOMV); Book-to-market ratio (BM); net operating cash flow to total assets (NOCFTOTA); earnings before interest and tax to total assets (EBITTOTA); the raw return for the one-year period prior to the announcement date (return from -260 to day -2) (RUNUP); blockholders of 5% or more share ownership (BH5), blockholders of 3% or more share ownership (BH3); and the Lee and Masulis (2009) measure of informational asymmetry, which we label "weak accrual quality" (WAQ). Lee and Masulis (2009) suggest that poor accounting quality results in a high level of asymmetric information with regard to the firm's value, and use McNichols' (2002) modification of the Dechow and Dichev (2002) model, which is:

$$CA_t = \gamma_0 + \gamma_1 * CFO_t + \gamma_2 * CFO_{t+1} + \gamma_3 * CFO_{t-1} + \gamma_4 * \Delta Sales_t + \gamma_5 * PPE_t + v_t.$$

where CA (current accruals) is Δ current assets minus Δ current liabilities minus Δ cash plus Δ debt in current liabilities, with Δ representing changes from year *t* to year *t-1*; CFO is cash flows from operations, calculated as net income before extraordinary items minus total accruals, with total accruals equal to CA minus depreciation and amortization expense; Sales is total revenue; and PPE is property, plant, and equipment. All variables are scaled by the average of total assets between year *t-1* and year *t*. We estimate the equation for one-digit SIC industry groups. We calculate a firm-specific information asymmetry measure, in which we compute the standard deviation of the residuals per firm for all years (over the period 1992-2005, with a minimum of four observations per firm) in which a value for the residuals is available.[5] Larger standard deviations imply poorer accruals quality and thus higher information asymmetry.

Several features are worthy of note from the comparison of internal SEOs versus external SEOs. In terms of size (as measured by market value), median market value is larger for internal than for external SEOs, whereas average market value goes the other way round. This mean/median divergence is symptomatic of a few very large firms that use the accelerated book-

[5] Lee and Masulis (2009) estimate the standard deviation of the residuals over the five-year period before the observation, i.e. $v_{j,t}$ through $v_{j,t-4}$. In following their method, we are able to calculate the information asymmetry variable for only 645 firms, as we lose firms with gaps in their financial reporting. Using this measure, on the necessarily reduced sample, provides qualitatively similar results.

building placing method. When we compare the natural logarithm of market value (LMV) we find that average and median LMV is significantly larger for the internal SEO sample. Next we observe that the median idiosyncratic risk in the year prior to SEO is significantly higher for the external group and that external SEOs have lower median liquidity in the year prior to SEO (as reflected by the inverse of proportionate bid-ask spread). The median discount is higher for internal versus external SEOs. For both debt measures (TDTOTA and LDTOTA) the median leverage of internal SEOs exceeds the external SEO group. The size of SEOs as proxied by offer proceeds (whether measured in total dollars or scaled), have a larger median for internal versus their external SEO counterpart. While showing up as significantly different (at the 5% level), median BM is effectively very similar between the two groups – approximately 0.6. The final dimension showing significantly different medians between the two groups is operating performance (whether proxied by the cash flow or earnings measure): the sub-sample of firms pursuing internal SEOs have higher performance. Notably, RUNUP, blockholdings and our information asymmetry variable do not show significant differences between the internal and external SEO groups in our univariate analysis.

Several features are worthy of note from the comparison across five sub groups in Panel B of Table II. First, in terms of size (as measured by average market value), accelerated book-building placings are made by the very largest UK firms. At the other end of the spectrum, smaller companies tend to opt for combined Open offer/placements, standalone placements or open offers. Second, with regard to IDYRISK we find that the highest risk measure goes to OOPPL and SPPL, while the lowest is found for RO and ABPL. Third, the proportionate bid-ask spread (PBA) proxy for illiquidity is largest for SPPL and OOPPL, while the lowest is found for ABPL. Fourth, the SEO price discount is largest for rights offerings with an average of around 20% (median around 17%). In contrast, the lowest median price discount of around 3% occurs for accelerated book-building. Fifth, in terms of leverage ratios (TDTOTA and LTDTOTA) we see that the ABPL and RO groups have higher median values, whereas SPPL has lowest median

values for both leverage ratios. Sixth, the highest average and median offer proceeds relate to the ABPL sub-group, which matches the large size of firms in this sub-group noted earlier. However, the relative size of offer proceeds is the lowest for ABPL sub-group. Seventh, the book-to-market medians are remarkably stable across the groups, ranging from a low of 0.5 to a high of 0.65. Eighth, in terms of the cash flow and earnings operating performance, the ABPL sub-group has the highest average and median. This result starkly contrasts the SPPL counterpart group of firms that exhibit much lower and negative values. Ninth, all categories of SEO firms have a positive average and median runup, with the highest (lowest) median value for ABPL (OOPPL). Tenth, in terms of blockholdings, ABPL have lowest blockholdings, whereas the open offer SEOs have highest blockholdings.

[Table II about here]

IV. The choice of seasoned equity offering methods

In this section we examine the determinants of issuance choice of seasoned equity offerings in a multivariate setting. We use a nested logit model (McFadden (1981)) to test our various hypotheses related to the issue choice. A nested logit model treats choices as a set of simultaneous decisions and assumes that a firm chooses the best outcome among the available alternatives. The nested model is generally more suitable for modelling joint decisions than a multinomial model when the independence of irrelevant alternative assumption is rejected. This independence can be tested with a Hausman specification: we find that the independence of irrelevant alternative assumption is rejected with 99% confidence, indicating that a simple multinomial logit model is inappropriate for our analysis. Appendix A provides information on how our nested logit model is estimated.

Cronqvist and Nilsson (2005) use a nested logit model for the issue choice in Sweden and model the choice between a rights offering and a private placement at the top level, while distinguishing between the underwritten status and whether a private placement is sold to

blockholders at the lower level. We adjust their nested logit structure to reflect the wider range of seasoned equity offering methods that UK firms use. Figure 1 shows our nested logit structure.

[Figure 1 about here]

We assume that seasoned equity issuers decide on whether to provide an opportunity to their current shareholders to subscribe to newly issued shares at the top level ("level 1"). Here the choice is characterised as one between "internal" equity investors (i.e. exclusively targeting existing shareholders) versus "external" investors (i.e. some part of the SEO is targeted toward new investors, though not necessarily exclusively). This choice is important as it has strong potential implications for the wealth transfer from current shareholders to outsiders. When the firm decides to allow all current shareholders to take up all new shares, it needs to specify whether the rights are tradable, i.e. the firm chooses between a rights offering and an open offer. This decision is characterised as a "level 2" decision on the "internal" side of Figure 1. Alternatively, in those situations that the firm decides to issue to institutional investors they have three options available: (1) accelerated offerings, (2) standalone private placements with institutional investors (known as bought deals), and (3) combination of open offers and private placements. This too, is characterised as a level 2 decision, but now on the external side of Figure 1. Here we can think of the fundamental decision being between allowing current shareholders to partly be involved or alternatively to be excluded from the SEO. Thus, in this situation firms decide between: a private placement combined with an open offer (which allows existing shareholders to participate) versus two cases that exclusively target external investors: regular private placements with institutional investors and accelerated offerings. Due to multicollinearity problems, a range of variables could not be meaningfully considered simultaneously, and as such estimations of various restricted versions of the nested logit models are reported in Table III.

[Table III about here]

A Level 1 Determinants of Issue Choice: Targeting Internal versus External Investors

Panel A Table III reports the results of the nested model for the top level, where the dependent variable is based on a dummy variable taking a value of unity if the SEO exclusively targets existing shareholders, and zero otherwise. The inclusive value represents the expected value from a particular choice made at the next lower level.

The estimated coefficient on the issue price discount variable is significantly positive in all models, indicating that the discount is higher for issues to current shareholders. This is sensible as in these issues current shareholders will seize the value of the subscription discounts. When the firm decides to issue to new investors the offering discount is a clear cost for current shareholders since it creates a wealth transfer away from them. We further find that firms that issue to current shareholders on average have lower idiosyncratic risk, which proxies for the quality of the firm. This finding is in line with predictions of Myers and Majluf (1984), as in their adverse selection framework an issue of equity to external shareholders brings negative connotations, whereas offerings to current shareholders have no adverse selection costs.

In terms of liquidity, we find a negative relation between the natural logarithm of proportionate bid-ask spread (LNPREPBA) for the year prior to the announcement and the decision to issue to current shareholders, i.e. SEO firms that are more liquid are more likely to target current shareholders. Firms issuing to current shareholders also tend to be larger firms. The estimated coefficient on RUNUP is significant and positive in Model 1 but insignificant in Model 6. Considering Model 1 augments Model 2 with RUNUP and Model 2 has the highest Pseudo R^2, we suspect that the significantly positive coefficient on RUNUP in Model 1 is indicating multicollinearity problems.

In Model 7 we include the Lee and Masulis (2009) measure of informational asymmetry, labelled "weak accrual quality (WAQ)", which reduces our sample size to 645 observations.. We find that firms with better accrual quality are more likely to issue to current shareholders. This is again in line with these firms being of better quality. The finding is also in line with predictions

of Hertzel and Smith (1993) and Wu (2004): they argue that firms are likely to choose a private placement when information asymmetry is high, since private placement investors can learn the true value of the firm at some cost. In Model 8 we include our variable on the pre-issue blockholdings in the firm, which reduces our sample size to 789 observations. The estimated coefficient on blockholdings is statistically insignificant, indicating that this variable does not have any influence on the issuance choice between internal versus external shareholders. Other variables with significant effects indicate that the likelihood of issuing to current shareholders is positively related to the firm's debt ratio and book-to-market ratio. However, book to market becomes insignificant in Model 7 – this model augments Model 2 with weak accrual quality (WAQ), potentially indicating multicollinearity problems between LBM and WAQ. Riskier firms issue shares to external shareholders as IDYRISK is significantly negative in all models (except Model 7). The relative offering proceeds are also significantly higher for firms issuing to current shareholders.

Overall, we find that larger and less risky firms with larger price discounts, good accrual quality and high book to market ratio, raise larger amounts of funds (relative to firm size) by issuing shares to existing shareholders.

B Level 2 Determinants of Issue Choice

B.1 Choice of tradable versus non-tradable rights

In Panel B of Table III we turn our attention to the lower level in our nested logit model, which deals with the decision between tradable (rights) offerings and non-tradable (open) offerings. The dependent variable is based on a dummy variable taking a value of unity if the SEO involves a tradable rights offering, and zero otherwise. In addition to the variable set examined in the level 1 decision, expected takeup is important for the choice between rights and open offers. Our measure of takeup is simply the percentage of shares taken up by shareholders. Eckbo and Masulis (1992) argue that tradable rights generate substantial adverse selection costs when sold

by current shareholders to outside investors. We therefore predict that the shareholders takeup is significantly higher for tradable issues. This is exactly what we find, and the finding corroborates evidence of Balachandran et al. (2008) on Australian rights issues.

Also of particular note in our results is that the discount is positively related to the likelihood of the issue being tradable. This is again intuitively appealing since in rights issues the current shareholders will seize the value of the subscription discount even if they do not want to increase their shareholding. We further find that larger firms and firms with higher book-to-market ratios are more likely to choose tradable issues. Model 7 shows that firms using tradable issues have better accrual quality. Book to market has an insignificant coefficient only in Model 7 (compared to Model 2 without WAQ), again indicating multicollinearity problems between LBM and WAQ.

In Model 8 we find that blockholdings increase the chance of choosing non-tradable issues, in line with firms with lower ownership concentration choosing rights offerings with higher discounts to enhance shareholder takeup. Firms with lower risk (see Model 5) and higher liquidity (see Model 3) choose tradable rights issues. However, their impact disappears in other models as firm size (LMV), liquidity (LNPREPBA) and risk (IDYRISK) are highly correlated. The remaining explanatory variables: debt ratio, relative issue size and runup do not have significant effects, which indicates that in many respects firms using right offerings and open offerings are quite similar.

B.2 Choice of offerings that involve a private placement

Panel C of Table III examines the level 2 decision relating to which sub-method is chosen when the firm decides not to give all their current shareholders the opportunity to fully take up the issue. In this part of the nested logit structure, the firms choose between a standalone private placement, a private placement combined with an open offer, and an accelerated offering. This part of the nested logit model is in the form of a multinomial logit, in which the coefficients

relate to the choice for a particular type compared to the base outcome, which in our case is chosen to be the standalone private placement method.

It can be seen that firms choosing a combination of a private placement with an open offer instead of a single private placement offer higher discounts than firms with standalone private placements, which is in line with our findings in level 1 of the nested logit structure (as the existing shareholders can capture the value associated with the discount). They further have higher offering proceeds and lower bid-ask spreads (i.e. they are more liquid). Model 7 indicates that firms combining private placements with open offers are of higher quality in terms of accruals than firms using standalone private placements. The higher information asymmetry for standalone private placements is in line with Hypothesis 3. Model 8 shows that these firms on average have lower blockholdings, all else equal.

Looking at the results reported in the columns headed "ABPL", it can be seen that firms deciding to go with an accelerated offering instead of a standalone private placement are larger firms, have higher offering proceeds to firm size and tend to have lower price discounts than standalone private placement firms. We also run the model 2 without liquidity as well as without IDYRISK (unreported results): we find that risk and liquidity variables have significantly negative coefficients for both OOPPL and ABPL indicating that firms with high liquidity and lower risk choose to issue ABPL or OOPL rather than SPL. Their impact disappears in other models as firm size (LMV), liquidity (LNPREPBA) and risk (IDYRISK) are highly correlated. In all other dimensions we find no convincing evidence to statistically separate accelerated offerings from their standalone private placement counterparts.

To obtain more insight into the economic significance of our results, we report the marginal effects in squared brackets. Marginal effects relate to the slope of the probability curve and are based on a one standard deviation change in a given explanatory variable holding all other explanatory variables at their sample means.

If we, for example, focus on the effect of a change in the book-to-market ratio (LBM) on the internal versus external issue choice (Model 1 of Panel A), we find that a 0.01 standard deviation increase in the market-to-book ratio will produce a 0.01 x 0.12 increase in the probability of choosing to issue internally for an otherwise "average" firm (i.e. the instantaneous rate of change is 0.12). It can be seen that especially the discount and the idiosyncratic risk have strong marginal effects on both the decision to issue to current shareholders and whether to make the rights tradable.

V Price reaction around the announcement dates

A Event study results

In this section we use the event study framework to examine the impact of SEO announcements on share prices within the theoretical structure developed in Section II. The daily returns are measured in logarithmic form, adjusted for dividends. Abnormal returns are generated for the three-day event window beginning on the day prior to the announcement day and continuing through the day after the announcement day. The market model is used to estimate abnormal returns, with an estimation period spanning from 260 to 61 days prior to the announcement day (day –260 to day –61). The *t-test* statistic (standardised residual test statistic) employed by Mikkelson and Partch (1986), Singh (1997) and Balachandran et al. (2008) is used to report the significance levels of the price reaction to the announcement.

Table IV presents the results of the event study. Panel A displays mean/median three-day event window abnormal returns for the five-way classification of SEOs described earlier: rights offers, open offers, combined open offer/private placements, standalone private placements and accelerated offerings. We observe that both standalone private placements and open offers have significantly positive three-day event window abnormal returns – for the former the mean (median) is 0.67% (0.51%), while for the latter the mean (median) is 1.85% (0.17%). In contrast, both rights offers and accelerated offerings show significantly negative abnormal returns, whereas the group that use the hybrid open off/placement method show negligible short-term

market reaction. Notably, the ANOVA results suggest that the mean abnormal returns are significantly different across the five groups indicating that the market differentiates between the various SEO mechanisms.

[Table IV about here]

Panel B of Table IV partitions the market reaction in terms of price discount – three subgroups of SEOs are formed (i.e. those groups that involve existing shareholders): low discount ($\leq 5\%$); moderate discount ($5\% > \text{Discount} \leq 10\%$); and high discount ($> 10\%$). Thus, this conditional analysis of abnormal market reaction produces a "3x5" design.

As can be seen from the table, price reaction varies across the three subgroups of price discount with the most unfavourable price reaction attaching to largest discount group, for each SEO type. ANOVA test statistics show that price reaction significantly varies across the three subsets of discount categories for each subgroup of SEO. This set of findings supports hypothesis 4(a). The price reaction is significantly positive for the low discount subset irrespective of which method is used (except for ABPL). However, it seems that low discount open offers are best, followed by their hybrid counterpart (OOPPL) that involves open offers. The ANOVA results suggest that the mean abnormal returns are significantly different across the five subgroups within the lowest discount sample indicating that the market differentiates between the various SEO mechanisms. These findings support hypothesis 4(b).

The moderate range discount sub-samples all produce positive announcement reactions, with a reasonably uniform median reaction across the first three groups. The ANOVA results suggest that the mean abnormal returns are not significantly different across the five subgroups within the moderate discount sample. In contrast, we find significantly negative reactions for all subgroups classified with a high discount – here the highest magnitude effect is picked up for the hybrid open offer/private placement and Accelerated offers providing some support for hypothesis 4(c).

B Multivariate Cross-sectional Analysis: Price Reaction, Discount and Shareholders Takeup

In this section, we examine the role of discount and takeup on price reaction using cross-sectional regressions analysis. The focus here is the role of the (inverse) discount and takeup as proxies for firm quality – the baseline prediction is a negative and positive coefficient, respectively. Beyond that, we partition each effect into components that link back to each of the five core categories of SEO – the aim is to uncover evidence of key associations between quality and the alternative methods. Table V shows results of running various specifications.

[Table V about here]

Regressions 1, 3 and 5 represent the baseline (unconditional) regression estimations on discount, takeup and both. We confirm the baseline sign predictions – negative and positive, respectively, at much better than the 1% level of significance. Other things equal, SEOs that have lower discounts and higher takeup tend to have higher announcement period abnormal returns. This is consistent with the idea that such firms are of higher quality.

Regression 2 provides our first conditional version in which the role of the discount is partitioned across the five SEO methods (via the use of appropriately defined dummy variables). While all cases confirm the negative role of the discount, accelerated offerings show the greatest discount effect, with an estimated coefficient of -0.445 compared to open offers having the weakest with an estimated coefficient of -0.202 (both individually significant at the 1% level), collectively supporting hypothesis 4(a). Unreported testing shows that these two cases are significantly different from each other (at the 5% level). Notably, in line with expectations, we see that the two "internal" SEO methods have a lower discount effect than their "external" SEO counterparts.[6] Collectively, the results in Model 2 support the view that quality firms are more likely to opt for "internal" SEO methods.

[6] In unreported analysis, we confirm this more formally by redefining the specification in which there are just two dummy variables – one that pools the RO and OO cases (DInternal) and the other that pools the OOPL, SPPL and

Regression 4 in Table V exhibits similar conditional modeling for the role of takeup – whereby in this case takeup is interacted with the three SEO cases that involve at least some element of existing shareholders (i.e. RO, OO and OOPPL). Here all cases confirm the positive role of takeup (at the 1% level) supporting hypothesis 4(d). We also examine the impact of takeup controlling for the impact of price discount in regression 6 and find the impact of takeup is robust to this variation in model specification. Hence, it strongly supports hypothesis 4(d).

VI Long-term Stock Returns

We examine the long-run performance associated with SEOs, focusing on portfolio returns using the calendar-time methodology (see for example, Loughran and Ritter (1995), Mitchell and Stafford (1997), Ikenberry, Lakonishok and Vermaelen (2000) and Hertzel and Zhi (2010)). We calculate monthly returns in calendar-time for a portfolio of SEO firms. Firms are added to the portfolio at the beginning of the month following the ex-date of the SEO and retained for the next three years, or until the stock no longer trades. At the beginning of each month, the portfolio is rebalanced so that each stock receives an equal weight. Over time, new companies enter the portfolio and old companies leave, causing the number of stocks in the portfolio to vary. In some months, the number of stocks in the portfolio is small. To reduce the impact of idiosyncratic noise in such cases, particularly when we partition our dataset into various sub-samples, those months where a portfolio contains less than 4 stocks are dropped from our analysis.

We use the Fama and French three-factor model and the market model in the calendar time methodology (although, to conserve space we only report the former, results are similar).

$$R_{Pt} - R_{ft} = \alpha + \beta_1 (R_{mt} - R_{ft}) + \beta_2 SMB_t + \beta_3 HML_t + \varepsilon_{pt}$$

Our proxy for the risk free rate is the 1-month T-bill return, R_{mt} is the FTSE All-share index return, SMB_t is the return on a portfolio of small stocks minus the return on a portfolio of large stocks, and HML_t is the return on a portfolio of stocks with high book-to-market ratios

ABPL (DExternal) cases. In that model, there are just two interaction terms involving the aggregate dummies and Discount.

minus the return on a portfolio of stocks with low book-to-market ratios. We use the Morgan and Stanley Capital International (MSCI) Indices for large, small, value and growth stocks in the UK to calculate returns on the SMB and HML portfolios.

Table VI reports results for these calendar time regressions across various subgroups of our SEO sample. Panel A shows the outcome for two subgroups: "internal" types of SEOs (RO and OO) and "external" types of SEOs (OOPPL, SPPL and ABPL). As can be seen in Panel A, the long-term alpha is significantly negative for "external" issues (at the 1%level), while for the "internal" SEOs alpha is statistically insignificant. These results provide strong support for hypothesis 5(a) as regards the long term performance of external versus internal SEOs. The remaining panels of Table VI explore various types of conditional analysis which partition the sample according to alternative measures of firm quality.

Panels B and C of Table VI analyse whether partitioning on the median price discount provides any deeper insights into the drivers of the long-run performance of our two core aggregated SEO groups: "internal" (RO and OO) and "external" (OOPPL, SPPL and ABPL) issues. More specifically, Panel B (Panel C) reports the results for low discounts (high discounts), operationalized in terms of a discount <= 10% (> 10%). The low discount case should more likely capture SEO firms that are high quality and Panel B confirms that, regardless of whether the SEO is internal or external, the long-term performance is not negative – though it is statistically indistinguishable from zero. In contrast, when focusing on the relatively high discount sub-sample, we see that the external SEO group exhibits statistically significant long-run under-performance, averaging -1.7% per month (see Panel C). That is, the poor long-run performance of low quality SEOs (as proxied by high discounts) underlies the general result shown in Panel A of this table and provides further support for hypothesis 5(a).

[Table VI about here]

Panel D of Table VI examines whether partitioning the sample on the basis of median takeup (as a further proxy for quality) can explain the long-run performance of the "internal"

type of SEOs (RO and OO). As expected, the low quality sub-group drives the long-run under-performance of the bigger group: internal SEOs with low takeups have statistically significant negative average monthly abnormal returns of -1.1% over the 3-year assessment window, while the high takeup firmsshow statistically insignificant long-run performances.

The total sample is split on the basis of median BMs in panels E and F of Table VI and we reassess the long-run performance of our two core aggregated SEO groups: "internal" (RO and OO) and "external" (OOPPL, SPPL and ABPL). The key result from this analysis is that book-to-market does not play a significant role in the long-term price adjustments– the internal (external) SEO group show insignificant (negative) long-run abnormal performance regardless of whether these firms are high or low BM. The internal SEO methods are preferred by the market, notwithstanding their value or growth status.

Since mispricing in the pre announcement period can impact upon SEOs we partition the long run performances on the basis of the prior event runup as a proxy for this mispricing (using the median RUNUP at 20% as the partitioning point) in Panels G and H of Table VI. RUNUP does not have a significant impact upon the long-term underperformance of the internal SEO group as this group has insignificant long-run abnormal performance regardless of whether these firms experienced a high or a low RUNUP. However, we find significant and negative long-term underperformance for external SEOs with lower RUNUP and insignificant underperformance for external SEOs with higher RUNUP. That is, the potential mispricing captured in the runup variable does not provide an explanation for the post announcement abnormal returns as corrections for prior event mispricing and these results do not provide support for hypothesis H5(b). In Panels I and J of Table VI we split our sample on the announcement period price reaction (MMN1P1) at 0% and reassess the long-run performance of our two core aggregated SEO groups: "internal" and "external". In the case of internal SEOs we find that the MMN1P1 variable does not play any role in the long-term underperformance, this group manifesting insignificant long-run abnormal performance regardless of whether these firms experienced high

or low MMN1P1. However, we do find significantly negative long-term underperformance for external SEOs with lower MMN1P1s at the 1 % level and with higher MMN1P1s at the 10% level. Again, these findings do not support the mispricing hypothesis, H5(b). Overall, we do not find any support for mispricing in the pre event period providing an explanation for long term underperformance.

We further partition simultaneously on the RUNUP and MMN1P1 ("2X2") variables to examine in more detail the drivers of the long-run performance of our two core aggregated SEO groups. As can be seen in Panels K, L, M and N, we do not find any long-term underperformance for any of the internal subgroups. In the case of the external group, however, we do find significantly negative long-term underperformance for all external subgroups except for the subgroup with high RUNUP & high MMN1P1. These results, then, corroborate the results above wherein we do not find empirical support for the notion that pre event mispricing can provide rationales for the post announcement abnormal returns in SEOs.

Next we report long-run results relating to a partitioning based on the sample median stock liquidity (using the proportionate bid-ask spread, PBA, as a proxy for liquidity). Given that high liquidity (low PBA) can serve as a quality proxy, we predict that such firms would have superior long-run abnormal performance compared to their low liquidity counterparts. Panels O and P show that this is in fact the case based on our sample of UK external SEOs: low liquidity firms produce an average monthly long-term abnormal return of -1.45%, whereas the high liquidity comparators show an insignificant long-run effect (and this difference is statistically significant at the 1% level), thereby supporting hypothesis 5(c). In contrast, we see that the internal SEO subgroups are indistinguishable on this differential liquidity basis and together they show no evidence of long-run under-performance.

The final group of panels in Table VI (Panels Q, R, S and T) analyse whether partitioning simultaneously on the median stock liquidity and median BM provides any added insights into the drivers of the long-run performance of our two core aggregated SEO groups. Considering the

internal group first, the most notable finding across the four panels is that a sub-group of these SEOs characterised by high liquidity and "value" (i.e. high BM) show significant positive long-run abnormal performance (at the 5% level). Specifically, this group produces an average long-run return of +0.59% per month. The internal subgroup with low liquidity and low BM show significant negative long-run abnormal performance (at the 10% level). With regard to the four external SEO sub-groups, as shown in Panels S and T (above), high liquidity is seen to "rescue" them from any negative long-run impact – interacting with BM has no bearing on this finding. However, as reported in Panels O and P, external SEOs are poor long-run performers when liquidity is low, regardless of the BM quality that the firms possess.

VII Conclusion

We analyze a large sample of UK seasoned equity offerings (SEOs), covering the period 1996 to 2005, that captures five major SEO types: rights offerings, open offers, open offers with private placements, standalone placements, and accelerated offers. Our study is divided into two main parts: in the first part, we explore the factors that determine the use of these different SEO types, while in the second we examine how the market reacts to their announcement and the associated long-term returns.

Our main findings relevant to the determinants of SEOs are as follows. We find that high quality firms (low risk, high liquidity, low information asymmetry) are more likely to issue to existing shareholders. We also find that tradable issues have higher takeup and if a firm decides to issue to non-existing shareholders, such firms with high information asymmetry tend to select standalone private placements.

Our main findings relevant to the market reaction of SEOs are as follows. We find general support for various short-term market reaction hypotheses: (a) there is a negative relation between the discount and the announcement period abnormal return; (b) the price reaction is more favorable for combined open offer/private placements and fixed-price private placements

(rights offerings and open offerings), when issues are made with a lower (higher) discount; and (c) there is a positive relation between shareholder takeup and announcement period abnormal return. We also find general support for various long-term market reaction hypotheses: (a) firms issuing to (internal) external shareholders (do not) experience long-term underperformance; (b) firms issuing to internal shareholders do not experience long-term underperformance irrespective of discount; (c) mispricing in the pre event period does not provide a cogent justification for long-term performances (d) firms issuing to external shareholders with larger discount experience larger long-term underperformance; and (e) long-term underperformance is lower for the issues made by highly liquid firms. Our empirical results with regards to price reactions, then, provide strong support for the explanatory power of quality related variables for long term reactions. We do not, however, find any strong empirical support for mispricing as providing rationales for the long term reactions in UK SEOs.

Figure 1: Nested Structure of SEOs in the UK

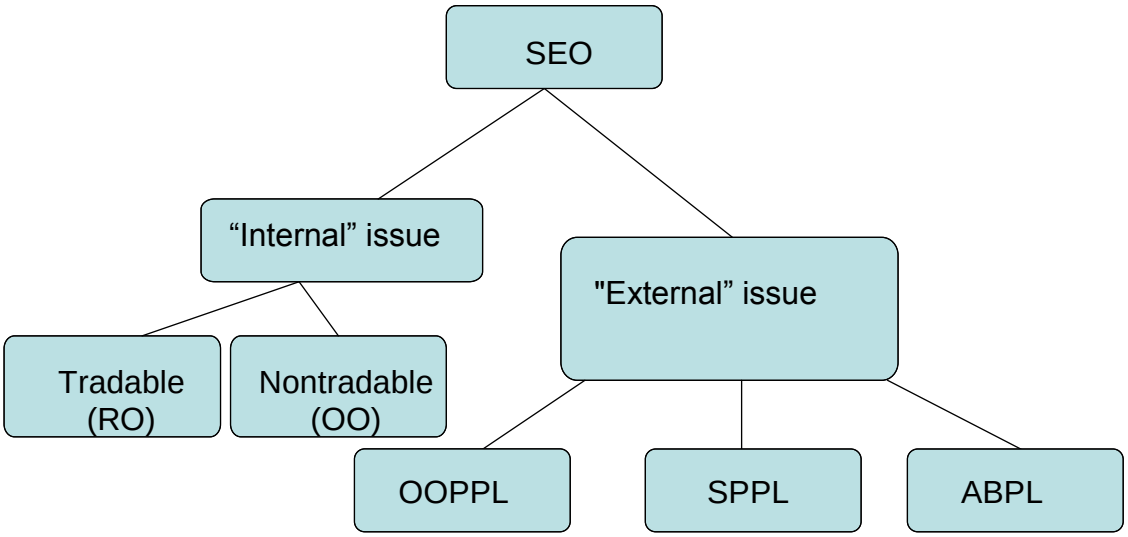

Table I: Summary of UK SEO Sample Selection and Exclusions

Panel A: Exclusions		
Reason for Sample Exclusion	No of offerings	
Initial Sample of British Firms before Exclusions		2342
Less Exclusions		
- Offering of options (warrants)	49	
- Offering of convertible securities	14	
- Offerings by trusts/funds	77	
- Offering of preference stocks and A & B shares	38	
- Part of restructuring program, mergers or trading halt around the announcement period	66	
- Resolution not passed/offering suspended	4	
- Announced simultaneously with debt offering or miscellaneous offer	178	
- Announced simultaneously with buyback or stock split or stock dividend or spin-off or divestment or executive stock option plan	112	
- Accounting/share price data unavailable	167	
- Private placement to blockholders	34	
- Detailed information about the issue or prospectus is unavailable	636	
Total Exclusions		1375
Final Uncontaminated Sample		967
Panel B: Distribution across SEO types		
Rights Offerings (RO)	227	
Open Offers (OO)	251	
Combination of Open Offers and private placement (OOPPL)	191	
Standalone private placement (SPPL)	233	
Accelerated Offering (AO)	65	
Final Sample		967

Table II: Some Basic Univariate Tests

Panel A of this table provides univariate tests across two sub-groups of SEOs: issues to existing shareholders which we label "internal SEOs" (sample size 478) versus issues to institutional investors or institutional investors and existing shareholders which we label "external SEOs" (sample size 489). Panel B of this table provides univariate tests across five sub-groups: (a) Rights Offerings (RO) (sample size 227); (b) Open Offers (OO) (sample size 251); (c) combination of Open Offers and private placements (OOPPL) (sample size 191); (d) standalone placements (SPPL) (sample size 233); and (f) accelerated book built offerings (ABPL) (sample size 66). The variables examined are: Market value (MV); natural logarithm of MV (LMV); idiosyncratic risk (IDYRISK); …. (PBAN1YR); Price discount (DISC); Total debt/ total assets (TDTOTA); Long-term debt/ total assets (LDTOTA); Offer proceeds (OP); offer proceeds to market value (OPTOMV); Book-to-market ratio (BM); net operating cash flow to total assets (NOCFTOTA); earnings before interest and tax to total assets (EBITTOTA); … (RUNUP); blockholders of 5% or more share ownership (BH5), blockholders of 3% or more share ownership (BH3); and the Lee and Masulis (2009) measure of informational asymmetry, which we label "weak accrual quality" (WAQ). Data for ownership concentration and accruals quality are not available for all firms. Thus we provide the sample size for these variables. The table also provides non-parametric, Kruskal–Wallis (KW) test statistics and Mann Whitney (MW) test statistics for the difference in median values across the different groupings. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

Panel A : Issues to existing shareholders versus institutional investors or institutional investors and existing shareholders

		Internal SEOs	External SEOs	MW test
MV ($M)	Mean	195.50	725.19	3.09***
	Median	49.37	33.45	
LMV	Mean	3.95	3.74	3.09***
	Median	3.90	3.51	
IDYRISK	Mean (%)	2.54	3.22	7.47***
	Median (%)	1.96	2.76	
PREPBA	Mean (%)	5.88	7.97	5.59***
	Median (%)	3.72	5.60	
DISC	Mean (%)	15.38	10.64	5.93***
	Median (%)	12.23	8.06	
TDTOTA	Mean (%)	22.67	18.15	4.80***
	Median (%)	20.10	12.41	
LDTOTA	Mean (%)	14.29	10.57	4.46***
	Median (%)	7.63	3.73	
OP ($M)	Mean	41.62	39.22	6.15***
	Median	13.42	7.57	
OPTOMV	Mean (%)	35.12	35.49	5.39***
	Median (%)	26.62	19.95	
BM	Mean	0.65	0.60	2.126**
	Median	0.61	0.58	
NOCFTOTA	Mean (%)	-2.97	-9.91	3.65***
	Median (%)	3.84	1.05	
EBITTOTA	Mean (%)	-6.42	-17.72	4.58***
	Median (%)	4.89	0.43	
RUNUP	Mean (%)	51.29	57.02	0.39
	Median (%)	20.87	19.70	
BH5	Mean (%)	42.29	39.31	1.57
	Median (%)	38.60	37.01	
	Sample size	403	396	
BH3	Mean (%)	51.10	48.16	1.61
	Median (%)	49.87	45.75	
	Sample size	403	396	
WAQ	Mean (%)	9.60	10.92	1.43
	Median (%)	6.84	7.67	
	Sample size	329	325	

.

Panel B: Analysis of Five sub-groups: RO, OO, OOPPL, SPPL and ABPL

		Internal SEOs		External SEOs			Five groups	ROvsOO	OOPPL,SPPL,ABPL	SPPLvsOOPPL
		RO	OO	OOPPL	SPPL	ABPL	KW test	MW test	KW test	MW test
MV ($M)	Mean	301.47	99.61	52.15	121.15	4868.11	214.64***	5.37***	148.60***	0.71
	Median	86.75	31.10	27.38	23.16	1059.95				
LMV	Mean	4.37	3.57	3.13	3.33	7.06	214.64***	5.37***	148.60***	0.71
	Median	4.46	3.44	3.31	3.14	6.97				
IDYRISK	Mean (%)	2.42	2.66	3.25	3.49	2.15	92.38***	2.10**	37.71***	1.83*
	Median (%)	1.89	2.02	2.73	3.20	1.84				
PBAN1YR	Mean (%)	4.84	6.83	8.29	9.42	1.81	193.54***	4.32***	122.11***	1.73*
	Median (%)	3.02	4.20	5.72	7.08	1.34				
DISC	Mean (%)	22.20	9.21	15.34	8.93	3.01	185.73***	10.83***	36.18***	3.34***
	Median (%)	16.88	7.05	10.27	8.11	3.41				
TDTOTA	Mean (%)	23.11	22.27	20.76	15.02	21.67	48.39***	1.34	23.87***	3.83***
	Median (%)	20.86	17.42	16.41	5.66	20.07				
LDTOTA	Mean (%)	15.37	13.32	11.28	8.23	16.90	61.76***	2.29**	37.04***	3.38***
	Median (%)	9.91	6.05	4.19	1.41	12.67				
OP ($M)	Mean	64.39	21.03	18.71	9.92	204.53	257.07***	5.79***	174.42***	8.28***
	Median	20.94	10.01	10.00	3.25	68.56				
OPTOMV	Mean (%)	33.52	36.57	58.98	23.19	10.61	280.03***	0.06	198.08***	12.27***
	Median (%)	26.71	26.31	41.69	10.91	5.28				
BM	Mean	0.68	0.62	0.62	0.58	0.63	13.70***	1.99**	5.01*	1.63
	Median	0.65	0.54	0.60	0.50	0.64				
NOCFTOTA	Mean (%)	-0.83	-4.90	-12.48	-13.96	8.59	56.15***	2.03**	37.76***	1.71*
	Median (%)	5.48	2.82	1.57	-4.45	7.63				
EBITTOTA	Mean (%)	-4.89	-7.80	-22.95	-20.33	7.03	59.66***	1.15	37.79***	0.88
	Median (%)	5.51	4.19	0.79	-6.23	7.00				
RUNUP	Mean (%)	45.95	56.12	49.65	50.30	49.66	12.58**	1.17	10.87***	2.39**
	Median (%)	26.36	16.24	7.07	26.92	36.21				
BH5	Mean (%)	36.27	47.88	39.03	43.60	25.78	52.54***	4.83***	27.58***	2.25**
	Median (%)	33.36	47.20	34.35	43.03	25.61				
	Sample size	194	209	153	187	56				
BH3	Mean (%)	45.11	56.68	48.19	51.49	37.01	45.62***	4.93***	19.10***	1.46
	Median (%)	44.40	55.08	45.15	50.55	40.21				
	Sample size	194	209	153	187	56				
WAQ	Mean (%)	8.46	10.64	10.72	12.43	6.97	18.02***	1.75*	12.31***	0.13
	Median (%)	6.47	7.39	8.57	8.08	5.23				
	Sample size	157	172	153	140	46				

Table III: Nested logit Models issuance choice

This table provides results for the nested logit models. Panel A of this table reports the upper level in the estimation of the nested logit model. The dependent variable in this panel takes a value of unity for issues to current shareholders (right offers, open offers which we label "internal" SEOs) and zero otherwise. Panel B reports the lower level in the estimation of the nested logit model, relating to the "internal" SEO group and the choice to issue tradable versus non-tradable issues. The dependent variable in this panel takes a value of unity for tradable issues (rights issues) and zero for non-tradable issues (open offers). Panel C reports the lower level in the estimation of the nested logit model relating to the "external" SEO group and the choice to issue to institutional investors privately versus accelerate offerings versus combination of the issue to existing shareholders and institutional investors privately. The dependent variable in this panel is zero for a standalone private placement, one for the combination of open offer and private placement, and two for an accelerated offering.

The variables examined are: Price discount (DISC); idiosyncratic risk (IDYRISK); natural logarithm of MV (LMV); natural logarithm of Book-to-market ratio (LBM); (RUNUP); natural logarithm of offer proceeds to market value (LNOPTOMV); total debt to total assets (TDTOTA); natural logarithm of average daily proportionate bid-ask spread for an year prior to the announcement date (LNPREPBA); blockholders of 3% or more share ownership (BH3); and the Lee and Masulis (2009) measure of informational asymmetry, which we label "weak accrual quality" (WAQ). The inclusive value represents the expected value from a particular choice made at the lower levels. *z*-statistics based on robust standard errors are in parentheses. Marginal effects of the variables are in square brackets. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

Panel A: Issuance choice – Internal VS External SEOs								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Constant	-0.545 (-1.01)	-0.697 (-1.25)	-2.028 (-3.71)***	-2.483 (-5.25)	0.918 (2.20)***	-0.478 (-1.28)	-0.803 (-1.21)	-0.252 (-0.37)
DISC	13.875 (8.41)*** [3.33]***	13.813 (8.94)*** [3.31]***	13.715 (9.54)*** [3.39]***	12.995 (9.60)*** [3.13]***	13.287 (8.82)*** [3.18]***	11.711 (8.78)*** [2.83]***	14.089 (7.06)*** [3.47]***	13.001 (7.78)*** [3.19]***
TAKEUP								
IDYRISK	-39.775 (-4.59)*** [-9.55]***	34.678 (-4.29)*** [-8.32]***	-18.502 (-2.73)*** [-4.57]***		-46.504 (-6.45)*** [-11.14]***		-21.994 (-2.52)** [-5.42]**	-36.857 (-4.36)*** [-9.06]***
LMV	1.088 (7.51)*** [0.26]***	1.179 (7.95)*** [0.28]***		1.049 (7.56)*** [0.25]***	1.471 (11.61)*** [0.35]***	1.555 (12.62)*** [0.38]***	1.054 (5.63)*** [0.26]***	1.140 (7.17)*** [0.28]***
LBM	0.514 (3.36)*** [0.12]***	0.520 (3.48)*** [0.12]***	0.452 (3.13)*** [0.11]***	.692 4.43*** [0.17]***	0.468 (3.32)*** [0.11]***	0.694 (4.67)*** [0.17]***	0.183 (1.08) [0.05]	0.361 (2.37)** [0.09]**
RUNUP	0.204 (2.57)*** [0.05]***					-0.036 (-0.60) [-0.01]		
LNOPTOMV	2.065 (11.64)*** [0.50]***	2.133 (11.29)*** [0.51]***	1.687 (9.54)*** [0.42]***	2.118 (10.93)*** [0.51]***	2.139 (11.73)*** [0.51]***	2.067 (12.00)*** [0.50]***	2.165 (9.44)*** [0.53]***	1.926 (10.90)*** [0.47]***
TDTOTA	1.907 (3.87)*** [0.46]***	1.909 (3.81)*** [0.46]***	1.955 (4.14)*** [0.48]***	1.908 (3.82)*** [0.46]***	1.975 (3.99)*** [0.47]***	1.944 (4.16)*** [0.47]***	1.328 (2.11)** [0.33]**	1.936 (3.78)*** [0.48]***
LNPREPBA	-0.808 (-4.15)*** [0.19]***	-0.800 (-3.85)*** [-0.19]***	-2.370 (-11.74)*** [-0.57]***	-1.302 (-6.43)*** [-0.31]***			-0.755 (-3.31)*** [-0.19]***	-0.505 (-2.28)** [-0.12]**
BH3								-0.452 (-0.91) [-0.11]
WAQ							-4.522 (-4.39)*** [-1.12]***	
Inclusive Value	-3.231 (-11.77)*** [-0.78]***	-3.316 (-11.71)*** [-0.80]***	-3.3701 (-11.85)*** [-0.83]***	-3.352 (-11.94)*** [-0.81]***	-3.262 (-11.55)*** [-0.78]***	-3.235 (-12.07)*** [-0.78]***	-2.505 (-9.55)*** [-0.62]***	-2.714 (-10.06)*** [-0.67]***
N	955	955	955	955	955	955	645	789
χ^2 (p-value)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Pseudo R^2	0.4969	0.4988	0.4859	0.4937	0.4820	0.4576	0.4580	0.4505

Panel B: Issuance choice of internal SEOs – Tradable rights VS non-tradable rights (Rights versus Open Offers)								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Constant	-3.772 (-4.23)***	-3.769 (-4.26)***	-4.377 (-5.11)***	-4.524 (-6.21)***	-3.474 (-5.72)***	-3.958 (-7.08)***	-5.113 (-4.52)***	-3.158 (-4.29)***
DISC	8.833 (6.64)*** [2.21]***	8.841 (6.87)*** [2.21]***	8.760 (6.67)*** [2.19]***	8.406 (6.89)*** [2.10]***	8.802 (6.90)*** [2.20]***	7.996 (6.87)*** [2.00]***	10.462 (5.83)*** [2.62]***	8.469 (5.92)*** [2.12]***
TAKEUP	1.803 (3.60)*** [0.45]***	1.801 (3.60)*** [0.45]***	2.062 (4.12)*** [0.51]***	1.868 (3.80)*** [0.47]***	1.804 (3.61)*** [0.45]***	1.925 (3.92)*** [0.48]***	2.368 (3.54)*** [0.59]***	2.135 (3.68)*** [0.53]***
IDYRISK	-13.690 (-1.46) [-3.42]	-13.772 (-1.59) [-3.44]	-8.582 (-1.03) [-2.14]		-15.794 (-2.07)** [-3.95]**		-1.824 (-0.17) [-0.46]	
LMV	0.382 (2.71)*** [0.10]***	0.381 (2.77)*** [0.10]***		0.320 (2.35)** [0.08]**	0.435 (4.20)*** [0.11]***	0.476 (4.54)*** [0.12]***	0.367 (1.86)* [0.09]*	0.365 (2.91)*** [0.09]***
LBM	0.354 (2.10)** [0.09]**	0.355 (2.10)** [0.09]**	0.344 (2.05)** [0.09]**	0.416 (2.43)** [0.10]**	0.347 (2.06)** [0.09]**	0.406 (2.41)** [0.10]**	0.300 (1.33) [0.07]	0.683 (2.06)** [0.17]**
RUNUP	-0.003 (-0.03) [-0.00]					-0.079 (-0.84) [-0.02]		-0.081 (-0.80) [-0.02]
LNOPTOMV	0.056 (0.26) [0.01]	0.056 (0.26) [0.01]	-0.105 (-0.51) [-0.03]	0.022 (0.11) [0.01]	0.063 (0.30) [0.02]	0.029 (0.14) [0.01]	0.058 (0.20) [0.01]	0.071 (0.31) [0.02]
TDTOTA	-0.821 (-1.38) [-0.21]	-0.820 (-1.38) [-0.21]	-0.771 (-1.28) [-0.19]	-0.808 (-1.29) [-0.20]	-0.808 (-1.37) [-0.20]	-0.800 (-1.29) [-0.20]	-0.04 (-0.04) [-0.01]	-0.710 (-1.06) [-0.18]
LNPREPBA	-0.139 (-0.50) [-0.03]	-0.140 (-0.50) [-0.03]	-0.625 (-3.03)*** [-0.16]***	-0.345 (-1.39) [-0.09]			-0.276 (-0.80) [-0.07]	
BH3								-2.356 (-3.86)*** [-0.59]***
WAQ							-3.184 (-1.77)* [-0.80]*	
N	466	466	466	466	466	466	320	393
χ^2 (p-value)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Pseudo R^2	0.2643	0.2643	0.2529	0.2597	0.2639	0.2571	0.3382	0.2890

Panel C – Decision on the form of issuance to external SEO group: institutional investors privately (SPPL) versus accelerate offerings (ABPL) versus combination of issues to existing shareholders and institutional investors privately (OOPPL).								
	(1)		(2)		(3)		(4)	
	OOPPL	ABPL	OOPPL	ABPL	OOPPL	ABPL	OOPPL	ABPL
Constant	-0.8057 (-1.18)	-8.2303 (-4.63)***	-0.7249 (-1.07)	-8.1476 (-4.60)***	-1.098 (-1.71)*	-10.645 (-6.60)***	-0.936 (-1.76)*	-8.865 (-6.79)***
DISC	3.2013 (3.37)*** [0.74]***	-6.1644 (-2.55)** [-0.09]**	3.1503 (3.31)*** [0.74]***	-5.6196 (-2.45)** [-0.08]**	3.241 (3.30*** [0.77]***	-4.725 (-2.18)** [-0.18]***	3.100 (3.29)*** [0.73]***	-5.825 (-2.67)*** [-0.08]**
IDYRISK	-8.5216 (-1.04) [-1.87]	-10.1741 (-0.53) [-0.09]	-4.0713 (-0.51) [-0.87]	-12.6056 (-0.69) [-0.13]	-1.183 (-0.14) [-0.42]	14.008 (1.03) [0.45]		
LMV	0.2072 (1.44) [0.04]	2.0467 (5.87)*** [0.02]**	0.3334 (2.47)** [0.07]**	2.0910 (5.91)*** [0.02]**			0.319 (2.40)** [0.06]**	2.062 (5.88)*** [0.02]**
LBM	0.0057 (0.03) [-0.00]	0.6311 (1.73)* [0.01]	0.0093 (0.06) [0.00]	0.7115 (2.06)** [0.01]*	-0.014 (-0.08) [-0.01]	0.196 (0.89) [0.01]	0.036 (0.22) [0.01]	0.738 (2.19)** [0.01]*
RUNUP	0.1787 (2.05)** [0.04]**	-0.0922 (-0.41) [-0.00]						
LNOPTOMV	2.0535 (9.59)*** [0.46]***	1.0089 (3.60)*** [0.00]	2.0295 (9.58)*** [0.46]***	1.0207 (3.60)*** [0.00]	1.886 (9.22)*** [0.42]***	0.144 (0.71) [-0.02]	2.029 (9.54)*** [0.46]***	1.002 (3.58)*** [0.00]
TDTOTA	1.7738 (2.86)*** [0.40]***	0.3972 (0.34) [0.00]	1.7945 (2.90)*** [0.41]***	0.3622 (0.30) [-0.00]	1.823 (2.77)*** [0.40]	0.978 (1.20) [0.01]	1.790 (2.86)*** [0.40]***	0.518 (0.45) [-0.00]
LNPREPBA	-0.8283 (-2.93)*** [-0.19]***	0.0832 (0.15) [0.00]	-0.6288 (-2.33)** [-0.14]**	0.1502 (0.27) [0.00]	-1.042 (-5.06)*** [-0.20]***	-2.696 (-6.67)*** [-0.07]***	-0.683 (-2.87)*** [-0.15]***	0.011 (0.02) [0.00]
BH5								
WAQ								
N	489		489		489		489	
χ^2 (*p*-value)	0.000		0.000		0.000		0.000	
Pseudo R^2	0.5048		0.4979		0.4308		0.4974	

	(5)		(6)		(7)		(8)	
	OOPPL	ABPL	OOPPL	ABPL	OOPPL	ABPL	OOPPL	ABPL
Constant	0.524 (1.28)	-8.547 (-6.69)***	0.163 (0.44)	-8.745 (-8.25)***	0.099 (0.10)	-6.642 (-3.42)***	-0.817 (-1.12)	-7.192 (-3.07)***
DISC	2.936 (3.32)*** [0.69]***	-5.805 (-2.56)** [-0.08]**	2.565 (3.16)*** [0.61]***	-6.463 (-2.76)*** [-0.09]***	2.781 (1.86)* [0.68]*	-3.165 (-1.22) [-0.08]	2.846 (2.53)** [0.67]**	-5.578 (-2.14)** [-0.08]**
IDYRISK	-13.271 (-1.92)* [-2.99]*	-8.478 (-0.54) [-0.04]			-0.599 (-0.06) [0.08]	-27.916 (-0.88) [-0.56]	-9.036 (-0.98) [-1.97]	-17.200 (-0.75) [-0.18]
LMV	0.559 (5.38)*** [0.12]***	2.031 (7.56)*** [0.02]**	0.563 (5.49)*** [0.12]***	2.043 (7.88)*** [0.02]**	0.189 (1.05) [0.03]	1.998 (4.10)*** [0.04]***	0.285 (1.88)* [0.05]	2.261 (5.44)*** [0.03]**
LBM	-0.057 (-0.36) [-0.02]	0.667 (2.11)** [0.01]*	0.0417 (0.27) [0.01]	0.640 (1.90)* [0.01]	-0.388 (-1.58) [-0.10]*	0.814 (1.97)** [0.02]**	-0.052 (-0.28) [-0.02]	0.926 (2.49)** [0.01]**
RUNUP			0.0639 (1.28) [0.02]	-0.143 (-0.65) [-0.00]				
LNOPTOMV	2.022 (9.90)*** [0.46]***	1.004 (3.71)*** [0.00]	2.022 (9.77)*** [0.46]***	1.011 (3.74)*** [0.00]	2.264 (9.00)*** [0.53]***	0.847 (1.85)* [-0.00]	2.054 (8.38)*** [0.46]***	1.056 (3.34)*** [0.00]
TDTOTA	1.927 (3.19)*** [0.44]***	0.481 (0.40) [-0.00]	1.913 (3.12)*** [0.43]***	0.521 (0.45) [0.00]	1.221 (1.38) [0.29]	-0.236 (-0.15) [-0.01]	1.665 (2.43)** [0.37]**	0.977 (0.74) [0.01]
LNPREPBA					-0.756 (-2.21)** [-0.18]**	0.418 (0.57) [0.01]	-0.783 (-2.60)*** [-0.18]***	0.553 (0.95) [0.01]
BH3							0.006 (0.20) [0.00]	-0.363 (-0.29) [-0.01]
WAQ					-2.975 (-1.87)* [-0.71]*	0.777 (0.34) [0.04]		
N	489		489		325		396	
χ^2 (p-value)	0.0000		0.0000		0.000		0.000	
Pseudo R^2	0.4915		0.4897		0.5119		0.5033	

Table IV: Price Reaction to SEO Announcements in the UK

This table reports mean and median abnormal returns and the standardized residual t-tests (SRT), employing the market model for seasoned equity issue announcements for the period the day before the announcement date to the day after. Panel A reports results for five sub-groups: (a) Rights Offerings (RO); (b) Open Offers (OO); (c) combination of Open Offers and private placements (OOPPL); (d) private placements (SPPL); (e) accelerated book-building (ABPL). Panel B reports results for each subgroup based on on: low discount (≤ 5%); moderate discount (between 5% and 10%); high discount (> 10%). This table also provides parametric ANOVA statistics for the difference in mean abnormal returns across the different groupings. * Significantly different from zero at the 10% level; ** significantly different from zero at the 5% level; *** significantly different from zero at the 1% level.

Panel A: Price Reaction to SEOs – five-way classification							
		RO	OO	OOPPL	SPPL	ABPL	ANOVA
All	Mean (%)	-1.59	1.85	-1.22	0.67	-1.72	3.95***
	Median (%)	-0.63	0.17	0.07	0.51	-1.92	
	SRT	(9.80)***	(14.52)***	(-1.16)	(3.48)***	(5.19)***	
	Sample size	227	251	191	233	65	
Panel B: Price Reaction for Groupings partitioned on Discount (Low, Moderate and High)							
Low discount (< 5%)	Mean (%)	1.76	5.31	4.94	2.98	-0.50	3.75***
	Median (%)	0.62	2.67	1.48	2.04	0.26	
	SRT	(6.38)***	(25.33)***	(12.02)***	(12.27)***	(-0.89)	
	Sample size	12	98	48	95	41	
Moderate discount	Mean (%)	1.07	0.51	2.52	1.07	-2.40	1.63
(between 5% and 10%)	Median (%)	0.40	0.26	0.16	0.24	-2.72	
	SRT	(3.19)*	(4.13)***	(5.60)***	(1.44)	(-4.98)***	
	Sample size	18	68	43	46	14	
High discount (> 10%)	Mean (%)	-2.03	-0.90	-5.78	-1.92	-5.75	2.02*
	Median (%)	-1.02	-0.65	-1.98	-0.40	-7.85	
	SRT	(-13.06)***	(-5.48)***	(-13.61)***	(-7.94)***	(-5.53)***	
	Sample size	197	86	100	92	10	
ANOVA test: Low discount versus Moderate discount versus High discount		2.34*	10.26***	12.60***			

Table V: Abnormal Price Reaction, Discount and Shareholder Takeup

This table provides cross-sectional regression results explaining the market response to SEO announcements. The dependent variable used in this regression is the three-day abnormal price movement from the day before the announcement to the day after the announcement date of the SEO issue employing the market model. Independent variables are *DISC*: the subscription price discount; and Takeup: shareholder takeup. These two variables are interacted with five different dummy variables relating to the alternative SEO methods in our sample: DRO – takes a value of unity if a rights issue is made and zero, otherwise; DOO – takes a value of unity if open offer is made and zero, otherwise; DOOPPL – takes a value of unity if a mixed open offer-private placement is made and zero, otherwise; DSPPL – takes a value of unity if a standalone private placement is made and zero, otherwise; and DABPL – takes a value of unity if an accelerate offering is made and zero, otherwise. White heteroskedasticity-consistent t-statistics are provided in parentheses. * Significantly different from zero at the 10% level; ** significantly different from zero at the 5% level; ***significantly different from zero at the 1% level.

	(1)	(2)	(3)	(4)	(5)	(6)
Constant	0.0347	0.0336	-0.0525	-0.0594	-0.0138	-0.0174
	(7.71)***	(7.53)***	(-4.60)***	(-4.93)***	(-1.22)	(-1.37)
DISC	-0.2741				-0.3117	
	(-7.22)***				(-6.75)***	
*DISC*DRO*		-0.2291				-0.2956
		(-4.96)***				(-4.17)***
*DISC*DOO*		-0.2023				-0.1948
		(-2.74)***				(-2.46)**
*DISC*DOOPPL*		-0.3592				-0.4046
		(-5.11)***				(-4.68)***
*DISC*DSPPL*		-0.2907				
		(-4.43)***				
*DISC*ABPL*		-0.4447				
		(-3.56)***				
Takeup			0.0775		0.0916	
			(4.59)***		(5.96)***	
*Takeup*DRO*				0.0628		0.0913
				(3.79)***		(4.74)***
*Takeup *DOO*				0.1258		0.0900
				(6.19)***		(4.60)***
*Takeup *DOOPPL*				0.0785		0.1084
				(2.78)***		(4.33)***
Adj R^2	0.1530	0.1610	0.0299	0.0526	0.2141	0.2251
F-statistic	175.52	38.08	21.04	13.03	89.52	32.46
P value	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
N	967	967	651	651	651	651

Table VI: Long-term Reaction using Calendar Time Method

This table reports average abnormal monthly return (α_p) for the rolling portfolios employing equally weighted monthly returns for three year period from the month after ex-date using the Fama-French three-factor model:

$$R_{Pt} - R_{ft} = \alpha + \beta_1(R_{mt} - R_{ft}) + \beta_2 SMB_t + \beta_3 HML_t + \varepsilon_{pt}$$

	α	β_1	β_2	β_3	Adj R^2
Panel A: Two main groups of SEO (Internal versus External) Internal: rights and open offers; External: combination of open offers-private placements, standalone placements and accelerated offerings)					
Internal SEOs (RO & OO)	-0.0024 (-0.72)	0.8556 (10.74)***	0.8100 (9.51)***	0.0108 (0.10)	0.61
External SEOs (OOPPL, SPPL & ABPL)	-0.0093 (-2.64)***	1.0182 (12.19)***	0.8381 (9.38)***	-0.1477 (-1.24)	0.64
Panel B: Low Discount SEOs (discount ≤10%)					
Internal SEOs (RO & OO)	-0.0050 (-1.32)	0.8032 (6.68)***	0.7570 (9.44)***	0.0201 (0.12)	0.49
External SEOs (OOPPL, SPPL & ABPL)	-0.0032 (-0.68)	0.9978 (9.04)***	0.9066 (8.51)***	-0.1456 (-1.07)	0.52
Panel C: High Discount SEOs (discount >10%)					
Internal SEOs (RO & OO)	-0.0010 (-0.28)	0.8990 (7.75)***	0.8508 (8.26)***	0.0107 (0.09)	0.59
External SEOs (OOPPL, SPPL & ABPL)	-0.0172 (-4.80)***	1.0318 (11.71)***	0.7625 (8.98)***	-0.1216 (-1.09)	0.62
Panel D: Internal SEOs (RO & OO) partitioned on high takeup vs. low takeup					
High Takeup (> 75%)	0.0018 (0.57)	0.9938 (9.15)***	0.7530 (7.69)***	0.0789 (0.67)	0.65
Low Takeup (< 75%)	-0.0112 (-1.98)**	0.7240 (4.83)***	1.0042 (6.65)***	0.0208 (0.10)	0.35
Panel E: High BM SEOs (BM > 0.6)					
Internal SEOs (RO & OO)	0.0010 (0.39)	0.7269 (10.20)***	0.6602 (9.12)***	0.2015 (1.97)*	0.65
External SEOs (OOPPL, SPPL & ABPL)	-0.0115 (-2.90)***	1.0075 (10.73)***	0.9982 (9.94)***	-0.0991 (-0.74)	0.62
Panel F: Low BM SEOs (BM < 0.6)					
Internal SEOs (RO & OO)	-0.0073 (-1.48)	0.9345 (8.07)***	0.9474 (7.65)***	-0.1433 (-0.87)	0.48
External SEOs (OOPPL, SPPL & ABPL)	-0.0086 (-2.28)**	1.0316 (11.59)***	0.7267 (8.02)***	-0.1923 (-1.79)*	0.59
Panel G: High Runup SEOs (Runup > 20%)					
Internal SEOs (RO & OO)	0.0011 (0.34)	0.8099 (10.66)***	0.6898 (8.49)***	0.0690 (0.64)	0.59
External SEOs (OOPPL, SPPL & ABPL)	-0.0047 (-1.07)	1.0975 (10.54)***	0.9932 (8.92)***	-0.2025 (-1.36)	0.59
Panel H: Low Runup SEOs (Runup < 20%)					
Internal SEOs (RO & OO)	-0.0059 (-1.17)	0.8617 (7.30)***	0.9179 (7.27)***	-0.0271 (-0.16)	0.44
External SEOs (OOPPL, SPPL & ABPL)	-0.0134 (-3.59)***	0.9204 (10.45)***	0.6796 (7.22)***	-0.1101 (-0.88)	0.55
Panel I: High announcement period abnormal return (MMN1P1 >0)					
Internal SEOs (RO & OO)	-0.0001 (-0.03)	0.8011 (8.47)***	0.8262 (8.17)***	-0.0090 (-0.07)	0.51
External SEOs (OOPPL, SPPL & ABPL)	-0.0066 (-1.67)*	0.9771 (10.51)***	0.9065 (9.11)***	-0.3149 (-2.38)**	0.60

Panel J: Low announcement period abnormal return (MMN1P1 <0)					
Internal SEOs (RO & OO)	-0.0040 (-0.98)	0.9515 (9.91)***	0.7854 (7.65)***	-0.0706 (-0.52)	0.54
External SEOs (OOPPL, SPPL & ABPL)	-0.0145 (-3.56)***	1.0823 (11.22)***	0.7365 (7.14)***	0.0604 (0.44)	0.57
Panel K: High RUNUP & High MMN1P1 SEOs (RUNUP>20% & MMN1P1>0%)					
Internal SEOs (RO & OO)	0.0038 (1.01)	0.8937 (9.90)***	0.6913 (7.16)***	0.0660 (0.51)	0.53
External SEOs (OOPPL, SPPL & ABPL)	0.003 (0.06)	1.0347 (7.91)***	1.1307 (8.09)***	-0.4044 (-2.17)**	0.49
Panel L: High RUNUP & Low MMN1P1 SEOs (RUNUP>20% & MMN1P1<0%)					
Internal SEOs (RO & OO)	-0.0009 (-0.23)	0.7161 (8.09)***	0.6779 (7.15)***	0.0695 (0.55)	0.47
External SEOs (OOPPL, SPPL & ABPL)	-0.0154 (-2.84)***	1.2178 (9.50)***	0.7984 (5.83)***	0.0248 (0.14)	0.48
Panel M: Low RUNUP & High MMN1P1 SEOs (RUNUP<20% & MMN1P1>0%)					
Internal SEOs (RO & OO)	-0.0004 (-0.10)	0.8930 (9.87)***	0.6953 (7.19)***	0.0686 (0.53)	0.53
External SEOs (OOPPL, SPPL & ABPL)	-0.0118 (-2.98)***	0.8813 (9.41)***	0.7004 (6.99)***	-0.2486 (-1.86)*	0.51
Panel N: Low RUNUP & Low MMN1P1 SEOs (RUNUP<20% & MMN1P1<0%)					
Internal SEOs (RO & OO)	-0.0058 (-1.16)	0.9749 (8.26)***	0.8107 (6.42)***	-0.0484 (-0.29)	0.45
External SEOs (OOPPL, SPPL & ABPL)	-0.0154 (-3.05)***	0.9768 (8.41)***	0.6649 (5.31)***	0.0847 (0.51)	0.44
Panel O: Low Liquidity SEOs (PBA > 3.5%)					
Internal SEOs (RO & OO)	-0.0062 (-1.45)	0.8127 (6.02)***	0.9208 (8.89)***	-0.0248 (-0.13)	0.49
External SEOs (OOPPL, SPPL & ABPL)	-0.0145 (-4.06)***	1.0299 (11.40)***	0.8980 (9.71)***	-0.1225 (-1.15)	0.65
Panel P: High Liquidity SEOs (PBA < 3.5%)					
Internal SEOs (RO & OO)	0.0009 (0.32)	0.9107 (9.40)***	0.7169 (8.34)***	0.0885 (0.87)	0.66
External SEOs (OOPPL, SPPL & ABPL)	-0.0021 (-0.44)	1.0168 (9.01)***	0.7811 (7.17)***	-0.2104 (-1.09)	0.47
Panel Q: High Liquidity & High BM SEOs (PBA < 3.5% & BM > 0.6)					
Internal SEOs (RO & OO)	0.0059 (2.15)**	0.7473 (9.70)***	0.6396 (7.40)***	0.2036 (1.88)*	0.62
External SEOs (OOPPL, SPPL & ABPL)	-0.0024 (-0.28)	1.0777 (5.14)***	1.2137 (5.70)***	-0.2628 (-0.58)	0.33
Panel R: High Liquidity & Low BM SEOs (PBA < 3.5% & BM < 0.6)					
Internal SEOs (RO & OO)	-0.0042 (-0.89)	1.0446 (5.79)***	0.8475 (5.20)***	-0.0225 (-0.16)	0.49
External SEOs (OOPPL, SPPL & ABPL)	-0.0039 (-0.76)	0.9753 (7.92)***	0.5572 (4.40)***	-0.1524 (-0.88))	0.38
Panel S: Low Liquidity & Low BM SEOs (PBA > 3.5% & BM < 0.6)					
Internal SEOs (RO & OO)	-0.0109 (-1.91)*	0.8321 (4.84)***	1.0710 (7.29)***	-0.2285 (-0.98)	0.39
External SEOs (OOPPL, SPPL & ABPL)	-0.0158 (-3.67)***	1.0686 (10.53)***	0.8466 (7.80)***	-0.1890 (-1.31)	0.57
Panel T: Low Liquidity & High BM SEOs (PBA > 3.5% & BM > 0.6)					
Internal SEOs (RO & OO)	-0.0025 (-0.69)	0.6557 (7.62)***	0.6625 (7.20)***	0.2051 (1.67)*	0.46
External SEOs (OOPPL, SPPL & ABPL)	-0.0129 (-3.13)***	0.9856 (9.62)***	0.9625 (9.56)***	-0.0558 (-0.35)	0.59

References

Balachandran, B., Faff, R., Theobald, M., 2008. Rights offerings, takeup, renounceability and underwriting status. Journal of Financial Economics.

Barclay, M., Holderness, C., Sheehan, D., 2007. Private placements and managerial entrenchment. Journal of Corporate Finance 13, 461-484.

Bohren, O., Eckbo, B., Michalsen, D., 1997. Why underwrite rights offerings? Some new evidence. Journal of Financial Economics 46, 223-261.

Booth, J., Smith, R., 1986. Capital raising, underwriting and the certification hypothesis. Journal of Financial Economics 15, 261-281.

Cronqvist, H., Nilsson, M., 2005. The choice between rights offerings and private equity placements. Journal of Financial Economics 78, 375-407.

Dann, L.Y., DeAngelo, H., 1988. Corporate financial policy and corporate control: a study of defensive adjustments in asset and ownership structure. Journal of Financial Economics 20, 87–127.

Dechow, P., Dichev, I., 2002. The quality of accruals and earnings: the role of accrual estimation errors. The Accounting Review 77, 35-59.

Eckbo, B., Masulis, R., 1992. Adverse selection and the rights offer paradox. Journal of Financial Economics 32, 293-332.

Heinkel, R., Schwartz, E., 1986. Rights versus underwritten offerings: an asymmetric information approach. Journal of Finance 41, 1-18.

Hertzel, M., Lemmon, M., Linck, J.S. and L Rees, 2002, Long-Run Performance Following Private Placements of Equity, Journal of Finance 57, 2595-2617.

Hertzel, M., Smith, R., 1993. Market discounts and shareholder gains for placing equity privately. Journal of Finance 48, 459-485.

Hertzel , M., Li, Z., 2010. Behavioral and Rational Explanations of Stock Price Performance around SEOs: Evidence from a Decomposition of Market to Book Ratios, Journal of Financial and Quantitative Analysis 45(4), 935 958.

Jegadeesh, N, 2000, Long-term performance of seasoned equity offerings: Benchmark errors and biases in expectations, Financial Management, 5-30.

Loughran, T, and J.Ritter, 1995, The new issue puzzle, Journal of Finance, 23-51.

Loughran, T, and J.Ritter, 2000, Uniformly least powerful tests of market efficiency, Journal of Financial Economics 55, 361-389.

Kutsuna, K., Smith, R., 2004. Why does book building drive out auction methods of IPO issuance? Evidence from Japan. Review of Financial Studies 17, 1129-1166.

Lee, G., Masulis, R., 2009. Seasoned equity offerings: quality of accounting information and expected flotation costs. Journal of Financial Economics 92, 443-469.

McFadden, D., 1981. Econometric models of probabilistic choice. In: McFadden, D., Manski, C. (Eds), Structural Analysis of Discrete Data with Econometric Applications. MIT Press, Cambridge, MA, 198-272.

McNichols, M., 2002. The quality of accruals and earnings: the role of accrual estimation errors: discussion. The Accounting Review 77, 61-69.

Monopolies and Mergers Commission, 1999. Underwriting services for share offers. Available at: www.competition-commission.org.uk/rep_pub/reports/1999/424under.htm#full.

Myers, S., Majluf, N., 1984. Corporate financing and investment decisions when firms have information that investors do not have. Journal of Financial Economics 13, 187-221.

Ritter, J. R. Investment Banking and Securities Issuance. In *Handbook of the Economics of Finance,* Vol. 1A, G. M. Constantinides, M. Harris, and R. M. Stulz, eds. Amsterdam, The Netherlands:Elsevier Science (2003).

Shleifer, A., Vishny, R., 1986. Large shareholders and corporate control. Journal of Political Economy 94, 461-488.

Slovin, M., Sushka, M., Lai, K., 2000. Alternative flotation methods, adverse selection, and ownership structure: evidence from seasoned equity issuance in the UK. Journal of Financial Economics 57, 157-190.
Wruck, H., 1989. Equity ownership concentration and firm value: evidence from private equity financings. Journal of Financial Economics 23, 3-28.
Wu, Y.L., 2004. The choice of equity-selling mechanisms. Journal of Financial Economics 74, 93-119.

Appendix A: Estimating a nested logit model

Our notations follow Cronqvist and Nilsson (2005). Firms make a choice of whether to allow current shareholders to obtain all newly issued shares indexed by $j = 1,\ldots,F$ and choose a particular issue type indexed by $k = 1,\ldots,M_j$. The objective function for choice j by firm i takes the form $V_{i,j} = \hat{V}_{i,j} + \varepsilon_{i,j}$ where $\hat{V}_{i,j}$ is the fitted value based on observable characteristics and $\varepsilon_{i,j}$ reflects unobserved characteristics. In the lower level objective function ($V_{i,j,k} = \hat{V}_{i,j,k} + \varepsilon_{i,j,k}$), $\hat{V}_{i,j,k}$ is separable into components reflecting the particular issue choices $M_{i,j}$ and the choice F_i (whether to allow current shareholders to obtain all new shares); we assume that $\varepsilon_{i,j,k}$ is generalized extreme-value distributed. The functional form for $\hat{V}_{i,j,k}$ is $\hat{V}_{i,j,k} = \alpha' A_{i,j} + \beta' B_{i,j,k}$, where α and β are parameter vectors and $A_{i,j}$ and $B_{i,j,k}$ are vectors of explanatory variables corresponding to choices j and k for firm i.

If P is the marginal probability of choosing a particular option, then firm i's joint probability of choosing j,k is $P_{i,j,k} = P_{i,j} \times P_{i,j,k|j}$. The conditional probability $P_{i,j,k|j}$ of issue choice j,k is $P_{i,j,k|j} = \dfrac{\exp(\beta' B_{i,j,k})}{\sum_{M_j} \exp(\beta' B_{i,j,k})}$. The inclusive value in our nested logit model represents the expected value from a choice made at the lower level, and for choice j it is defined as $IV_{i,j} = \log\left\{\sum_{M_j} \exp(\beta' B_{i,j,k})\right\}$. We estimate inclusive values as in McFadden (1981). The marginal probability of the choice whether to allow current shareholders to obtain all newly issued shares makes use of this inclusive value and is $P_{i,j} = \dfrac{\exp(\alpha' A_{i,j} + \lambda IV_{i,j})}{\sum_{F} \exp(\alpha' A_{i,j} + \lambda IV_{i,j})}$. Parameter vectors α, β, and λ and upper level coefficients are estimated using sequential maximum likelihood, and lower level coefficients are estimated by maximizing the conditional log-likelihood function.