Is Long-Horizon Abnormal Performance after Seasoned Equity Offerings Illusory? New Evidence from the UK [*]

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Abstract

We study the long-horizon abnormal performance of a large sample of UK firms following rights issues and placings over the period 1989-1997. We make the following contributions relative to prior research. First, we extend the existing literature on long-horizon performance after seasoned equity offerings to rights issues by exploiting the institutional framework in the UK that explicitly favors rights issues compared to other national markets. Second, we study the long-run performance after both rights issues and placings complementing Slovin, Sushka and Lai (2000) who focus on announcement day wealth effects. We find that long-run performance after rights issues and placings is sensitive to the methodology and benchmarks used. We find that in contrast to the announcement day effects, neither category of issue shows on average negative abnormal performance after the seasoned equity offerings using a calendar-time approach.

Keywords: Rights Issues, Placings, Long-Run Performance, Market Efficiency.

JEL Classification: G00, G14, G30

1.   Introduction

There is mounting evidence of long-horizon security price under-performance following corporate events like initial public offerings (IPOs) and seasoned equity offerings (SEOs). Using US data, Spiess and Affeck-Graves (1995), Loughran and Ritter (1995), Brav, Geczy and Gompers (2000), Eckbo, Masulis and Norli (2000), Jegadeesh (2000) and Mitchell and Stafford (2000) all find poor stock market performance 3-5 years after a SEO. Cai and Loughran (1998) and Kang, Kim and Stulz (1999) also find evidence of post-SEO underperformance using Japanese data. Similar long-horizon underperformance of SEOs is also reported for UK firms by Levis (1995) and Suzuki (2000). This evidence of systematic and predictable post-event underperformance violates market efficiency.

Fama (1998), addressing the anomalous findings of long-horizon event studies, highlights two main issues relating to their methodology used. The first is that models commonly used to estimate expected returns are incomplete descriptions of the systematic patterns of average returns. The second relates to the methodology used in these studies to measure long-horizon returns which results in the introduction of a number of biases. Several authors, for example Lyon, Barber and Tsai (1999) and Mitchell and Stafford (2000), suggest ways in which these statistical biases could be mitigated. Fama (1998) concludes however that evidence of abnormal performance in long-horizon event studies is not a robust stylized fact and these anomalies may fade away if appropriate corrections for risk are used.

Our study contributes to the literature, on long-horizon stock price performance of firms after seasoned equity offerings, in two ways. As far as we are aware, we are the first to consider different categories of seasoned equity offerings in the UK market. We exploit the UK institutional framework which, unlike the US, favors rights issues to study both rights issues and placings. Our extension complements the work of Slovin, Sushka and Lai (2000) who focus on announcement day effects of UK SEOs. Second, we apply a range of metrics to measure long-horizon performance and find, as in previous research, that abnormal performance is very sensitive to the methodology used. For example, using matched size/industry and book-to-market/industry benchmarks, firms making rights issues and placings have negative post-event abnormal performance on a three-year period. However, using a calendar-time portfolio approach and the Fama-French 3-factor model to measure average abnormal return, we find that post-event abnormal performance disappears.

The paper is organized as follows. Section 2 provides a detail description of the institutional features of the UK market. Next, in Section 3 we briefly review the prior literature. Section 4 describes the data and methodology used. The empirical results are discussed in Section 5 and Section 6 concludes.

2. Institutional Background

Rights issues are commonly used by companies listed in the London Stock Exchange (LSE) to issue new equity. A rights issue is defined as "an offer to existing shareholders of securities to subscribe or purchase further securities in proportion to their holdings". It is designed to protect the existing shareholders' wealth from being diluted by seasoned equity issuance. The regulatory and institutional environment in the UK favors rights issues and makes them more common than in the US (see, for example, Hansen (1988)). Specifically, rights issues have a legal basis in the UK Company Act, 1985[1] and the Listing Rules of the London Stock Exchange[2] also provide for similar provisions. Over the period of 1989 to 1997, about 52% of total amount of equity raised by UK firms were through rights issues (about £50,593 million out of a total of £98,210 million)[3]. Thus, the UK stock market provides a unique opportunity to study rights issues. The sequence of activities followed by UK firms to raise capital through rights issues is described in Appendix A.

There are two other methods for issuing seasoned equity in the UK: open offers and placings. An open offer is an invitation to existing shareholders to subscribe or purchase securities in proportion to their holdings. The difference between an open offer and a rights issue is that an open offer is not done by means of a renounceable letter or other negotiable documents. Therefore, existing shareholders cannot trade the right. The London Stock Exchange requires that the discount of the offer price in an open offer not exceed 10% and the offer period should be no less than 15 business days. In general, an open offer meets the pre-emption requirements in section 89 of the UK Company Act, 1985.

In the case of seasoned equity offerings through a placing, the placed shares are offered to new shareholders on a non-pro rata basis. However, to avoid violation of pre-emption requirements in this case, an Extraordinary General Meeting needs to be called to have a special resolution approved by more than 75% of shareholders. An exception to the above rule is when the proceeds of a placing amount to less than 5% of the outstanding shares of the issuer. In this case, the company can make a placing as long as the issue amount is within the authorized capital. In addition, similar guidelines, which are not legal

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[1] The legal basis for rights issues is provided in the European Community's (EU) Second Council Directive on Company Law of 1976 (see Article 29) and the UK Company Act, 1985 (see Section 89, 90, 95). The provisions of the UK Company Act, 1985 requires the offers of shares to shareholders must be on a pre-emptive basis.

[2] The LSE Listing Rules Clause 9.18 states: "Unless shareholders otherwise permit, a company proposing to issue equity securities for cash must first offer those securities to existing shareholders and to holders of other equity securities of the company who are entitled to be offered them in proportion to their existing holdings. Only to the extent that the securities are not taken up by such persons under the offer may they then be issued for cash to others or otherwise than in proportion mentioned above." See *The listing Rules*, 2000 for details.

[3] The data is obtained from *Underwriting Services for Share Offers: A Report on the Supply in the UK of Underwriting Services*

requirements, have been issued by the Association of British Insurers and the National Association of Pension Funds for placings[4]. These stipulate that the placings should be limited to 5 % of the existing capital in any one year and 7.5 % in any three years. As a consequence of these rules and guidelines, it is common for UK firms to combine a placing with an open offer. In this case, seasoned equities are first offered to existing shareholders on a pre-emptive basis and the "rump" is then being placed to new shareholders. This is called "a placing with clawback".

3.   Review of Prior Research

The long-horizon performance of firms after seasoned equity offerings has been the subject of much research. This research, summarized in Table 1, finds negative average abnormal returns in the three to five years after a seasoned equity offering. The period prior to the issue of the SEO, on the other hand, is marked by positive returns to investors[5]. Most empirical studies compute abnormal performance in two ways. First, they compare buy-and-hold returns (BHRs) of the event firm relative to a benchmark. The second method is to compute calendar-time abnormal returns using a suitable asset pricing model such as the Fama-French 3-factor model.

Using the first approach, Spiess and Affleck-Graves (1995), for example, find an average annualized BHAR of -6.1% five years after the SEOs using a sample of 1,247 SEOs over the 1975-1989 period. Loughran and Ritter (1995) show an annualized BHAR of −9.1% using 3,702 SEOs over the period of 1970-1990. Brav, Geczy and Gompers (2000) use size, book-to-market and momentum portfolios as benchmarks. Using a sample of 3,775 SEOs from 1975 to 1992, they find average annualized 5-year BHARs are -3.9% for equal-weighted portfolio and -3.4% for a value-weighted portfolio. Eckbo, Masulis and Norli (2000), using a sample of 3,315 SEOs from 1964 to 1995, find that annualized equal-weighted BHAR is -4.8% and −2.2% for the value-weighted case. Jegadeesh (2000) reports an annualized BHAR of −4.9% using a sample of 2,992 firms over the 1970-1993 period. Finally, Mitchell and Stafford (2000) use a sample of 4,439 SEOs from 1961-1993 and find the annualized equal-weighted and value-weighted BHARs are −2.7% and −1.1% respectively.

Starting from Loughran and Ritter (1995), the calendar-time portfolio approach has become a commonly used method to measure long-horizon abnormal performance. Based on Fama-French 3-factor model, Loughran and Ritter (2000) report an average monthly abnormal return of −0.47% (-5.64% annually)

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for Share Offers, 1999.

[4] See *Underwriting Services for Share Offers: A Report on the Supply in the UK of Underwriting Services for Share Offers*, 1999 for details.

[5] Loughran and Ritter (1995) report an average return in the year prior to SEO issue of 72%.

and –0.32% (-3.84% annually) for equal weighted and value weighted portfolios. Further, Brav, Geczy and Gompers (2000) find an average monthly abnormal return is –0.37% (-4.44% annually) for an equal-weighted portfolio and –0.14% (-1.68% annually) for a value-weighted portfolio. Eckbo, Masulis and Norli (2000) also find that, using NYSE/Amex firms, the monthly abnormal performance is –0.12% (-1.44% annually) for equal-weighted portfolio and –0.17% (-2.04% annually) for the value-weighted case. They use Fama-French 3-factor model with both unconditional factors and conditional factors. Jagadeesh (2000) finds that the monthly abnormal return is –0.45% (-5.40% annually) for SEO firms. Finally, Mitchell and Stafford (2000) find a –0.33% (-3.96% annually) equal-weighted abnormal return and a –0.03% (-0.36% annually) value-weighted abnormal return per month in the three years after the SEO.

Marsh (1979) is the first study of rights issues in the UK market. He uses data from 1962-1975 and finds that he cannot reject the hypothesis that the UK market is efficient with respect to rights issue announcements[6]. Levis (1995) is perhaps the first to study long-term abnormal performance using UK data. His sample consists of 713 initial public offerings (IPO) firms and the subsequent rights issues by the same firms within 5 years of the IPOs over the 1980-1988 period. He uses firms from both the main and unlisted securities markets (USM)[7] of the London Stock Exchange and the Financial Times Actuaries (FTA) index, the Hoare Govett Smaller Companies (HGSC) index[8] and size-controlled portfolios[9] as benchmarks. He finds that firms having seasoned equity offerings after the IPOs show positive average abnormal returns in the 12 months prior to the announcement of rights issues and negative abnormal returns in the 18 months period after the announcement. The main focus of his paper however is the relation between IPO underpricing and subsequent rights issues.

Slovin, Sushka and Lai (2000) study wealth effects around the announcement of rights issues and placings by UK firms over the 1986-1994 period. Their sample has 200 insured rights issues, 20 uninsured rights issues[10] and 76 placings[11]. They find an average 2-day excess return of -2.9% around announcement for insured rights issues and –5% for uninsured rights issues. In contrast, they find a positive average excess

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[6] Marsh (1980) and its follow-up Marsh (1994) focus on the role of underwriters and their excess profit and are not directly related to our study.

[7] This market was set up in 1980 mainly for smaller companies. It is a step stone for small companies to be listed in the main market of LSE. In the early 1990s, there were more than 400 companies dealt in USM. However, the number of listed firm fell to 275 on 1993. This market has only met limited success and was closed in the end of 1996. Its function is replaced by Alternative Investment Market (AIM) opened in 1995.

[8] HGSC index is a value-weighted index consisting the lowest 10% by capitalisation of the main and USM markets of the LSE. There are about 1600 firms in the index.

[9] The control portfolios are constructed by all firms in the same size decile of each sample firm. The size deciles are formed on the basis of market value of equity in the end of previous calendar year.

[10] For insured rights issues, the underwriters guarantee to purchase any unsubscribed shares at the expiration data, while uninsured underwriters do not.

return of 3.3% for placings. They also use a sample of SEOs from 1982-1985, a period when rights issues were effectively the only flotation method, as an out-of-sample test. They find that after the deregulation of flotation methods in 1985, the decision of avoiding rights issues together with going through a placing is taken as a positive signal by the market. They conclude therefore that placings can be used as an alternative method by high quality UK firms seeking other financing methods.

Suzuki (2000) also studies price reaction during the announcement period for the UK SEOs and relates this to the use of proceeds and flotation methods. He uses a sample of 826 SEOs from 1991-1996 and finds that right issues have significant negative abnormal returns while open offers have positive abnormal returns during the announcement period. His evidence is consistent with Slovin, Sushka and Lai (2000). Though long-horizon performance is not the main focus of his study, he reports a significant negative average abnormal return of -15%, during the two years following a rights issue.

4. Data and Methodology

4.1 Data

We use data on seasoned equity offerings made by UK firms from 1989 to 1997. The details of the offerings are taken from *Extel Takeovers, Offers and New Issues.* The following criteria are used in selecting our final sample:

(1) Seasoned equity offerings have to be common equities issues offered in Pound Sterling.

(2) Issuing firms are non-financial[12] and non-utility[13] firms[14].

(3) Issuing firms are listed on the London Stock Exchange but not on the Third Market[15] (3rd), the Unlisted Securities Market[16] (USM) or the Alternative Investment Market (AIM)[17].

(4) Stock price/return data for issuers is available on the London Share Price Database (LSPD).

(5) Market capitalization and accounting data for issuers is available on the LSPD and the Worldscope databases.

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[11] A placing is not a private placement, but it is a method of public security issuance comparable to a firm commitment offering in the US.

[12] Financial firms include banks, insurance companies, investment companies, investment trusts and property firms.

[13] Utility firms include electricity, gas distribution, telecommunication and water industries.

[14] This criterion follows the convention of empirical finance study. The industrial groups of the issuing firms are checked from LSPD and then double-checked with the Worldscope Database.

[15] The 3rd market was closed in the end of 1990.

[16] USM was set up in 1980 and was closed in the end of 1996.

[17] AIM was set up in 1995 to replace the role of USM.

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We provide, in Table 2, details of our sample of SEOs selected on the above criteria. The sample consists of 670 rights issues and 392 placings. Our data differs from Levis (1995), who is the first to study long-run performance after SEOs by UK firms, in two ways. First, we use firms listed on the main market of the London Stock Exchange while Levis (1995) uses firms from both the main market and unlisted securities market. Second, Levis (1995) considers seasoned offerings by firms that form part of his initial IPO sample and importantly he does not distinguish between rights issues and placings.

Next, Table 3 provides details of the amount of proceeds raised by UK SEOs in our sample for rights issues and placings. We find that the rights issues dominate the UK equity issue market. For example, of the total amount of £36,627 million raised from 1989 to 1997, £30,717 million (84%) was through rights issues, while £5,910 million (16%) was through placings. The average amount per rights issues is £46 million and £15 million for placings. It is therefore clear from this that rights issues are the most popular method of seasoned equity issue in the UK. It should also be noted that the average size of each rights issue is larger than a typical placing. Figure 1, depicts the relative number of issues between the two SEOs categories, while Figure 2 compares the amount raised between the two methods. We indicate in Table 4 the industry distribution of the UK SEOs samples used in our study. Although our data spans a wide range of industries, we can still find evidence of clustering. For both rights issues and placings, more than 50% of the sample firms belong to seven industry groups. In order to address this issue, we control industry for the matching firm approaches in our empirical analysis.

4.2 Methodology

There are three main methods to measure long-horizon abnormal returns. The first is buy-and-hold abnormal returns (BHARs) that compute the difference between the compounded return of the event firm and that of the benchmark over a period of say 3-5 years after the event. Next are cumulative abnormal returns (CARs) that simply add up the returns of the event firm and their benchmark and compute their difference as in a traditional event study. The third is a calendar-time abnormal return (see Jaffe (1974) and Mandelker (1974)) which measures abnormal returns relative to expected returns from an asset pricing model. We now provide details of how we apply these methods to our data.

4.2.1 Buy and Hold Abnormal Return (BHAR)

We use the BHAR methodology to measure the pre- and post-event abnormal performance for the i' th firm from period T_1 to T_2 as:

$$BHAR_{i,t} = \prod_{t=T_1}^{T_2}(1+R_{i,t}) - \prod_{t=T_1}^{T_2}(1+R_{b,t}) \qquad (1)$$

where $R_{i,t}$ is the total return of the sample firm in event month t, $R_{b,t}$ is the total return of the benchmark over the same period. The test statistics used is the traditional t-statistic:

$$t = \overline{BHAR_{i,t}} \times \sqrt{n} / s(BHAR_{i,t}) \qquad (2)$$

where $\overline{BHAR_{i,t}}$ is the average across firms for BHAR, $s(BHAR_{i,t})$ is the cross-sectional standard deviation of BHAR for all sample firms, and n is number of firms.

An alternative method of computing long-run stock price performance is to use cumulated abnormal returns (CARs). The difference between CARs and BHARs is that CARs ignore the effects of compounding returns. BHARs therefore represent the actual wealth effect for an investor in a more realistic way than CARs. Following Barber and Lyon (1997) and Kothari and Warner (1997) we do not use CARs in our study.

The benchmarks used in our study are size/industry matched firms and book-to-market ratio/industry matched firms. We use matching firms as benchmarks instead of broad indices in order to mitigate biases in the calculation of BHARs. Barber and Lyon (1997) identify three main sources of biases in calculating BHARs. First, is the "new listing bias" which arises since IPO firms tend to underperform market indices and adding new firms to the index results in a positive bias to abnormal returns (see, for example, Ritter (1991)). The second is the "rebalancing bias", which occurs because indices are periodically rebalanced whereas sample firms are not, thus leading to a negative bias[18] in calculating abnormal return. The first two sources of bias can be mitigated using matched firms as benchmarks. Finally, BHARs are positively skewed and therefore use of standard t-statistics leads to incorrect inferences. However, individual firms are more likely to have extreme positive buy-and-hold returns than broad indices. Hence, if matched firms are used as benchmarks, this bias can also be reduced.

We now provide details of the methodology followed for matching event firms with similar firms that have not had SEOs. For each event firm, we find a matching firm in the same industry group which has the closest but higher market capitalization[19] and the closest book-to-market ratio to the event firm. We obtain

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[18] Periodical rebalancing of the indices results in selling good-performing stocks and buying bad-performing stocks. Barber and Lyon (1997) show that poor performers tend to become better performers in the next month and *vice versa*. Thus, it leads to a negative bias to abnormal return.

[19] The reason to match with a higher market capitalization firm is twofold. First, we assume the sample firm will grow over the

market capitalization for the event and matching firms from the LSPD at the end of the previous calendar year and the book-to-market ratio from Worldscope at the end of the previous fiscal year. We exclude firms that have had SEOs in the previous 3 years before the event year from the group of potential matching firms. We calculate both equal-weighted and value-weighted[20] BHARs starting from the month following the SEO announcements[21] over a period of 3 years[22]. Finally, if the event firm is delisted before the third year, we calculate the BHAR till the delisting month. If the matched firm is delisted from the market, we redo the matching following the same procedure to find another matching firm to replace the first one[23]. Further, if the matching firm issues equity within the 36 months of event period, we replace it with a different but similar matched firm. In this case, the matching firm BHAR is calculated until the end of the month prior to the announcement month. We also calculate a 3-year buy-and-hold returns (BHR) of the event firms prior to the announcement[24]. If the event firm does not have enough return data in the previous 36 month[25], we calculate pre-event BHR back till the earliest return data we have in the LSPD.

Finally, the third set of benchmarks we use for calculating BHARs are 25 size/book-to-market portfolios. These portfolios are obtained by ranking all firms from the LSPD for which the following data is available: the market capitalization for the end of the previous calendar year and the book-to-market ratio at the end of the previous fiscal year. We exclude firms in the size/book-to-market sort that have issuances within the previous 3 years to reduce any benchmark bias. We then allocate all firms into a 5×5 grid and calculate the 25 value-weighted portfolio returns each month. We match event firms to a portfolio with similar size/book-to-market characteristics. The procedure for calculating the equal-weighted and value-weighted post-event BHARs and pre-event BHRs is the same as for matching firm approach. Following Lyon, Barber and Tsai (1999), we use their skewness-adjusted t-statistic[26] for drawing inferences.

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36 months of event study period. Second, the positive abnormal return for the issuers between the end of the prior year and the event date will increase the market capitalization of the event firm. If the event firm is the largest firm among the industry group, the matching firm will be chosen from the second largest firm in the industry group.

[20] The value-weighted abnormal return is based on market capitalization of the sample firms.

[21] The use of announcement date is due to UK practice. The issuing firms have to report all offer terms on the announcement day in the UK, and the offer terms can not be altered till in the end of subscription. While in the US, underwriters can finalize the offer terms after the initial announcement or just prior to the offer day, which is between announcement date and the end of subscription. Therefore, in terms of empirical analysis, the share price reaction after the announcement of the UK SEO implies market's evaluation to all the issuance information. This is the reason why we calculate CAR and BHAR from the month following the announcement date instead of the offer date used in the US studies. This is also suggested by Slovin, Sushka and Lai (2000).

[22] We use this method to avoid the share price reaction around the announcement period, since our study concern long-horizon abnormal performance. This method is also used in Levis (1995), Mitchell and Stafford (2000), Brav, Geczy and Gompers (2000) and Boehme and Sorescu (2000).

[23] When we redo the matching procedure, we still base on the market capitalization and book-to-market ratio of the same year as the first matching firm. For example, if one 1989 event firm needs more than one matching firm in the 36 months of event study period, we re-match it by finding a firm which has the closest but higher market capitalization and the closest book-to-market ratio next to the first matching firm.

[24] The pre-event 3-year BHR is calculated until the month prior to the SEO announcement.

[25] It is usually due to that the firm is not yet listed in LSE.

4.2.2   Calendar-Time Portfolio Approach

It is possible that firms may undergo another event over the period when abnormal returns are computed resulting in overlapping of long-horizon returns as well as cross-correlation across event firms. We therefore use a calendar-time portfolio approach (see Jaffe (1974) and Mandelker (1974)) to reduce this bias following Loughran and Ritter (1995), Brav, Geczy and Gompers (2000), Mitchell and Stafford (2000) and Jegadeesh (2000) among many others.

The calculation of the calendar-time portfolio abnormal returns requires use of an asset pricing model. We use a Fama-French 3-factor model[27] for the UK market. We estimate the intercept, a_i, in the following regression:

$$R_{pt} - R_{ft} = a_i + b_i(R_{mt} - R_{ft}) + s_i SMB_t + h_i HML_t + x_{it} \tag{3}$$

R_{pt} is the monthly return on the equal-weighted or value-weighted calendar-time portfolio of the
   event firms.

R_{ft} is the monthly return on one-month treasury bills.

R_{mt} is the return on the return of the value-weighted portfolio of all firms in the market.

SMB_t is the difference in the returns of the value-weighted portfolios of small stocks and big stocks.

HML_t is the difference in the returns of the value-weighted portfolios of high book-to-market stocks
   and low book-to-market stocks.

We form the calendar-time portfolios, for each month of our sample period, by including all firms that have more than one SEOs within 3 years. The calendar-time portfolio methodology can control for cross-sectional correlation due to clustering of events and overlapping event returns.

We also use a 4-factor model[28] to measure the monthly abnormal return following the SEOs. We estimate the intercept in the following model as in Carhart (1997):

$$R_{pt} - R_{ft} = a_i + b_i(R_{mt} - R_{ft}) + s_i SMB_t + h_i HML_t + p_i PR12_t + x_{it} \tag{4}$$

where $PR12_t$ is the difference in the return on an equal-weighted portfolio of high momentum (winners) stocks and low momentum (losers) stocks[29].

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[26] See Lyon, Barber and Tsai (1999).
[27] See Fama and French (1993) for details.
[28] See Carhart (1997) for details.
[29] We follow Carhart (1997) in calculating this momentum factor.

The coefficients in Equation (3) above are estimated in an unconditional framework. We next estimate a conditional version of the Fama-French 3-factor regression as in Ferson and Schadt (1996) and Eckbo, Masulis and Norli (2000). We use pre-determined instrumental variables, Z_t, and use the following linear function for the conditional intercept and each conditional factor loading:

$$a_i(Z_t) = a_{0i} + A'_i z_t \qquad (5)$$

$$b_i(Z_t) = b_{0i} + B'_i z_t \qquad (6)$$

where z_t is a vector of instrumental variables equaling $Z_t - E(Z_t)$. We then estimate the following regression:

$$
\begin{aligned}
R_{pt+1} - R_{ft+1} &= a_{0i} + A'_i z_t + b_{0i}(R_{mt+1} - R_{ft+1}) + b'_i(z_t(R_{mt+1} - R_{ft+1})) \\
&+ s_{0i}SMB_{t+1} + S'_i(z_t SMB_{t+1}) + h_{0i}HML_{t+1} + H'_i(z_t HML_{t+1}) + x_{it+1}
\end{aligned} \qquad (7)
$$

Pesaran and Timmermann (2000) find that, the monthly log difference of the FTSE-All Share Index dividend yield, the industrial production of the manufacturing sector, the money supply (M0) and the retail price index[30], have predictive power for stock returns in the UK. We therefore use lagged values of these variables as instruments in estimating Equation (7).

5. Empirical Results

5.1 Pre-Event BHRs and Post-Event BHARs using Size/Industry and Book-to-Market/Industry matched Firms

We present, in Table 5, pre-event BHRs and post-event BHARs using size/industry matched firms for a period of 36 months prior to and after the rights issues and placings announcements. We find positive buy-and hold return (BHR) for event firms over a three-years period prior to both types of issues; the equal-weighted buy-and-hold return for rights issues is 56.70% and is 48.90% for placings while the value-weighted buy-and-hold return for rights issues and placings are 77.28% and 110.20% respectively.

Table 5 shows the buy-and-hold abnormal returns for rights issues and placings relative to a size/industry

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[30] The data of all instrumental variables are from Data Stream.

matched firm as a benchmark. We find, subsequent to a rights issue, that an equal-weighted BHAR is significantly negative at –19.50% (p-value 0.003). It should be noted however that only 4 out of 9 years show significant underperformance. The post-event value-weighted BHAR for rights issues is –8.53% (p-value 0.036) and is less significant than for the equal-weighted portfolio. Only 3 out of 9 years have significantly negative average BHARs. In the case of placings, however, we find a statistically insignificant equal-weighted BHAR of –9.93% (p-value 0.374) over the 1989-1997 period. We also find that for placings the value-weighted BHAR is –8.19% and statistically insignificant (p-value 0.226). Our results show that post-event abnormal returns, when using size/industry matching firm approach, may perhaps be driven by relatively small size firms in the UK market as in Brav, Geczy and Gompers (2000). We find that, while both rights issues and placings have negative buy-and-hold long-horizon abnormal returns those for placings are less negative. This can be compared to Slovin, Sushka and Lai (2000) find negative announcement day abnormal returns for rights issues and positive wealth effects for placings. Our results, in the case of equal-weighted long-horizon underperformance after rights issues are similar to Levis (1995)[31] and Suzuki (2000)[32] when using size/industry matched firms as benchmarks.

Table 6 presents the pre-event BHRs and post-event BHAR using book-to-market/industry matched firms during the 36 months prior to and after the rights issues and placings. We find positive buy-and hold return (BHR) for event firms prior to the announcement; the equal-weighted BHR for rights issues is 63.26% and 65.73% for placings. The value-weighted BHR for rights issues and placings are 71.08% and 125.26% respectively.

As indicated in Table 6, the post-event equal-weighted BHAR for rights issues is –17.62% (p-value 0.031) from 1989 to 1997 however only 2 out of 9 years have significantly negative BHARs. The value-weighted BHAR is –15.69% (p-value 0.014). The equal-weighted BHAR for placings is –19.62% (p-value 0.104) and marginally significant. We find a dramatic decrease in the value-weighted BHAR for placings, which is –1.62% (p-value 0.834) and is not significant. We conclude that for both rights issues and placings, the results appear to be mainly driven by small firms. Our results show that placings have less negative results than rights issues when BHARs are computed using value-weighted returns.

In general, both types of UK SEOs show a negative price reaction in the three years following the equity issue using a size/industry and book-to-market/industry matching firm approach. This long-run result can be compared with the announcement day effect in Slovin, Sushka and Lai (2000) and Suzuki (2000); UK rights issues have negative announcement day return, but placings have positive price reactions. Further,

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[31] Levis (1995) finds a -15.10% of abnormal return 18 months following the rights issues.
[32] Suzuki (2000) shows a –15% of abnormal return 2 years after the right issue announcements.

using value-weighted BHARs, the size of long-run underperformance is reduced compared to equal-weighted BHARs. Fama (1998) suggests using value-weighted portfolios instead of equal-weighted portfolios since most asset pricing models have difficulty pricing small stocks and also because the value-weighed captures more accurately the wealth effect which investors experience. Our results support this conjecture.

Finally, since the underperformance could be driven by outliers, we follow Knez and Ready (1997) and test our results for robustness to outliers. We first rank the squared BHARs and trim the observations, starting from the largest squared BHAR using different trimmed proportion[33]. This technique may trim uneven number of observation from each tail. This is different from trimmed means and "winsorized" means which trim an equal number of observation from each tails. Our results, not reported in the interests of brevity, are qualitatively similar to those obtained using the matched firm approach.

5.2 Pre-Event BHRs and Post- Event BHARs using Size/Book-to-Market matched Portfolio Benchmarks

We present in Table 7, pre-event BHRs and post-event BHARs of size/book-to-market matched portfolios during the 36 months prior to and after rights issues and placings. We again find positive buy-and hold returns (BHRs) for event firms in the 3 years prior to the announcements; 68.21% for equal-weighted rights issues and 81.12% for equal-weighted placings. The value-weighted BHR for rights issues and placings are 79.96% and 131.01% respectively. Interestingly, both the pre-event BHR for rights issues and for placings show a positive relation between the return and firm size.

In Table 7, we also find that the equal-weighted BHAR for rights issues is –18.26% (p-value 0.017) and the value weighted is BHAR –19.92% (p-value 0.006). However, it is clear that the underperformance is driven by small firms (portfolio 1) and the larger firms (portfolio 4) in our sample. Only these two size groups have significant negative abnormal return 3 years after the issue. For placings, the equal-weighted BHAR and value-weighted BHAR are –12.53% (0.208 p-value) and –25.38% (p-value 0.000) respectively. There is no abnormal return for small firms (portfolio 1) and much of the underperformance is concentrated on smaller firms (portfolio 2) and large firms (portfolio 5). This is different from the findings for rights issuers, where abnormal performance is more significant in the smallest firms. Comparing our results with the announcement period effects in Slovin, Sushka and Lai (2000), we find that, in the equal-weighted case, rights issues have stronger long-run negative performance than placings. However, this is not found in the value-weighted case. Again, our results in the equal-weighted long-horizon

underperformance after rights issues are similar to the findings in Levis (1995) and Suzuki (2000) using size/book-to-market matched portfolios as benchmarks.

The results using size/book-to-market matched portfolios are not similar to the results found using the matched firm method. First, on average, the value-weighted BHARs are higher than equal-weighted BHARs in both rights issues and placings. Second, for placings, large firms tend to underperform the benchmark portfolios more than small firms do. This provides clear evidence that long-horizon abnormal performance is highly sensitive to the choice of the benchmark.

5.3 Calendar Time Approach using the Fama-French Three Factor Model and Carhart's (1997) Four Factor Model

We next use the calendar-time approach to calculate BHARs, since it accounts for cross-sectional dependence between individual sample firms and also mitigates overlapping bias.

We report, in Table 8, the results of calendar time approach using the Fama-French three-factor model. Panel A shows results using non-purged factors i.e. where we construct Fama-French three factors without excluding event firms within the previous 3 years. We find that the equal-weighted calendar time portfolio of rights issues has an average monthly abnormal return of –0.27% (p-value 0.185, a -9.72% return for 36 months). The intercepts for placings is -0.15% (p-value 0.594, a -5.40% return for 36 months). The value-weighted calendar time portfolio has a monthly average abnormal returns of -0.09% (p-value 0.734, a -3.24% return for 36 months) for rights issues and -0.35% (p-value 0.164, a -12.60% return for 36 months) for placings. Thus, both equal-weighted and value-weighted BHARs, using the calendar-time portfolio approach are negative but not statistically significant.

Panel B of Table 8 presents the regression results using purged factors. Here we exclude event firms in the previous 3 years while constructing the Fama-French three factors, thus avoiding benchmark bias. We find that all the corresponding intercepts decrease. This is reasonable, since the event firms have negative price reaction after the SEO announcement in general. For equal-weighted calendar time portfolio, in the case of rights issues, we find a monthly average abnormal return of –0.38% (p-value 0.080, -13.68% for 36 months). The intercepts for placings is -0.19% (p-value 0.524, -6.84% for 36 months). For value-weighted calendar time portfolio, the monthly average abnormal return is -0.16% (p-value 0.585, -5.76% for 36 months) for rights issues and -0.38% (p-value 0.141, -13.68% for 36 months) for placings. The results in Panel B are similar to those in Panel A except for a marginal significant abnormal return in the case of an

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[33] We use 1%, 5% and 10% trimmed proportion for the robustness check.

equal-weighted rights issue portfolio.

The results of calendar time approach using Carhart's (1997) four-factor model are shown in Table 9. Panel A indicates results using non-purged factors, i.e. where we construct the four factors without excluding event firms within the previous 3 years. In this case, the equal-weighted calendar time portfolio shows that rights issues have an average monthly abnormal return of –0.16% (p-value 0.492, -5.76% for 36 months). The intercepts for placings is -0.36% (p-value 0.233, -12.96% for 36 months). The value-weighted calendar time portfolio has monthly average abnormal returns of -0.43% (p-value 0.159, -15.48% for 36 months) for rights issues and -0.70% (p-value 0.010, -25.20% for 36 months) for placings.

Panel B of Table 9 presents the regression results using purged factors. Here we exclude event firms in the previous 3 years while constructing the four factors, thus avoiding benchmark bias. We find again that all the corresponding intercepts decrease. For equal-weighted calendar time portfolio, in the case of rights issues, we find a monthly average abnormal return of –0.29% (p-value 0.238, -10.44% for 36 months). The intercepts for placings is -0.56% (p-value 0.077, -20.16% for 36 months). For value-weighted calendar time portfolio, the monthly average abnormal return is -0.50% (p-value 0.123, -18.00% for 36 months) for rights issues and -0.80% (p-value 0.004, -28.80% for 36 months) for placings. The results in Panel B are similar to those in Panel A.

The results of the calendar-time approach using the Fama-French three-factor model provide clear evidence that there is no statistically significant negative abnormal underperformance in UK firms following both rights issues and placings. Further, the findings show that after allowing cross-sectional dependence and overlapping bias, the abnormal returns found using the BHAR methodology fade away. However, when the Carhart (1997) four-factor model is used, the monthly abnormal returns become more significant. The different findings between the three and four factor models implies that, in the UK market, adding a momentum factor may not improve the explanatory power of the Fama-French 3-factor model.

We also estimate a conditional version of Fama-French 3-factor regression using four instrumental variables; the FTSE-All Share Index dividend yield, industrial production of manufacturing section, money supply (M0) and retail price index. We can now control for unconditional model misspecfication due to factor loadings varying over time. We can also account for a time-varying intercept in a conditional model. Table 10 reports the intercept of both unconditional and conditional models. The results show confirm the results of the unconditional tests and we find no evidence of abnormal performance after rights issues and placings for the equal- and value-weighted portfolios. The only exception is the value-weighted average monthly abnormal return for placings, which is now significantly negative.

6.   Summary and Conclusion

Our study contributes to the literature on long-horizon stock price performance of firms that have had seasoned equity offerings through rights issues and placings. While there are several studies of long-horizon returns after SEOs, ours is the first to consider rights issues and placings by UK firms. We exploit the UK institutional framework that favors seasoned equity offerings through rights issues. Next, we apply a range of metrics to measure long-horizon performance. We find, as in previous studies, that abnormal performance is very sensitive to the metric used. In order to ascertain whether long-horizon underperformance is an artifact of the estimation methodology used, we first use size/industry and book-to-market/industry matching firm approach and size/book-to-market matching portfolio approach to measure BHARs. We find, consistent with the US findings, that firms making rights issues and placings have positive BHRs 3 years prior to the event announcements. We find negative abnormal performance in the 3 years following both categories of seasoned equity offerings. Most of the statistically significant underperformance however occurs in rights issues rather than placings. We also analyze the BHARs by event firm size and find that most of the underperformance is driven by small firms in the case of right issues while the negative returns are driven by larger firms in the case of placings. Finally, based on a calendar-time portfolio approach using Fama-French 3-factor model, we find, for both equal-weighted and value-weighted portfolios, the abnormal returns are negative but not statistically significant for both rights issues and placings. Thus, we conclude that the abnormal negative stock price performance after seasoned equity offerings is not a robust feature of our data and that this abnormal performance fade away when alternate techniques to correct for risk are utilized.

Our findings show that long-horizon abnormal performance following UK rights issues and placings is highly sensitive to the methodology used. We can conclude, following Fama (1998), that the apparent anomalous underperformance after seasoned equity offerings may be an artifact of the methodology used and that long-horizon abnormal return may disappear with reasonable changes in techniques. Our study also underlies the need to adjust correctly for risk in measuring long-horizon security returns.

Appendix A

The sequence of activities followed by UK firms seeking to raise capital through rights issues is as follows:

(1) The London Stock Exchange (LSE) requires listing particulars[A1] to include a statement of recent borrowings of the issuing group which must, in the absence of exceptional circumstances, be not more than 42 days prior to the publication of the listing particulars.

(2) Following the announcement of a rights issue, a renounceable allotment letter or other negotiable documents is sent to existing shareholders, which may be traded as nil-paid rights for at least 21 days before the payment of the new equities is made.

(3) Where the company has insufficient unissued capital available, an extraordinary general meeting (EGM) is required to obtain approval from a majority of the shareholders to increase the authorized capital. A notice period of 14 days is required for an EGM, but if the business includes a special resolution then the notice period is increased to 21 days. The periods in (2) and (3) cannot be concurrent, since dealings in nil-paid rights cannot be done on the basis of partial allocation.

(4) At the close of the offer period, the new shares are entered into a register, and certificates are sent out. Rights issues in the UK are usually underwritten in full or part by investing institutions at a discounted offer price[A2]. The underwriters are the responsible for taking up the "rump" at the end of the offer period.

[A1] The LSE Listing Rules Clause 5.1 requires companies issuing new equities to produce listing particulars or a prospectus, which must be submitted to and approved by the Exchange. ." See *The listing Rules*, 2000 for details.
[A2] Usually the offer price is 80-85% of the market price on the day before announcement.

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Table 1
Recent Studies in Long -Horizon Abnormal Performance following SEOs

Panel A   US Data

Study	Sample Period	Main Results
Spiess and Affleck-Graves (1995)	1975-1989	5-year EW BHAR is –6.1% on size/industry matched firms.
Loughran and Ritter (1995)	1970-1990	5-year EW BHAR is –9.1% on size matched firms.
Loughran and Ritter (2000)	1973-1996	EW FF is –5.64%, and VW FF is –3.84%.
Brav, Geczy and Gompers (2000)	1975-1992	5-year EW BHAR is –3.9%, and 5-year VW BHAR is –3.4%. EW FF is –4.44%, and VW FF is –1.68%. EW 4F is –2.28%, and VW 4F is –3.36%.
Eckbo, Masulis and Norli (2000)	1964-1995	5-year EW BHAR is –4.8%, and 5-year VW BHAR is –2.2%. EW FF is –1.44%, and VW FF is –2.04% for NYSE/Amex firms. EW FF is –5.04%, and VW FF is –1.44% for Nasdaq firms.
Jegadeesh (2000)	1970-1993	5-year EW BHAR is –4.9%. EW FF is –5.40%. EW 4F is –3.72%.
Mitchell and Stafford (2000)	1961-1993	3-year EW BHAR is –2.7%, and 3-year VW BHAR is –1.1%. EW FF is –3.96%, and VW FF is -0.36%.

Panel B   Japanese Data

Study	Sample Period	Main Results
Cai and Loughran (1998)	1971-1992	5-year EW BHAR is –3.5%.
Kang, Kim and Stulz (1999)	1980-1988	5-year EW BHAR is –9.8%.

Panel C   UK Data

Study	Sample Period	Main Results
Levis (1995)	1980-1988	18-month CAR is –15.1% for rights issues on size matched portfolios.
Slovin, Sushka and Lai (2000)	1986-1994	2-day CAR is –3.09% for rights issues and is 3.31% for placings.
Suzuki (2000)	1991-1996	2-year BHAR is –15% for rights issues on size matched portfolios.

* All returns are annualized returns based on the assumption in Ritter (2001), except for the UK studies.
* Buy-and hold abnormal returns are based on the size/book-to-market matched firms/portfolios, if not otherwise stated. In Slovin, Sushka and Lai (2000), the cumulative abnormal return is a 2-day on traditional event study period.
* EW stands for equal-weighted portfolio and VW stands for value -weighted portfolio.
* CAR is cumulative abnormal return, BHAR is the buy-and hold abnormal return, FF is the calendar-time abnormal return using Fama-French 3-factor model and 4F is the calendar-time abnormal return using Carhart's (1997) 4-factor model.

Table 2
Distribution of Event Sample SEO firms by Year and Method of Issue

Panel A   Rights Issues

	1989	1990	1991	1992	1993	1994	1995	1996	1997	Total
Original Samples[a]	61	53	120	53	113	94	63	72	41	670
Size/Industry Matched Firms[b]	54	50	112	48	102	89	63	69	40	627
Book-to-Market/Industry Matched Firms[c]	38	41	99	45	90	78	49	56	35	531
Size/Book-to-Market Matched Portfolios[b,c]	40	44	104	49	97	83	51	59	35	562

Panel B   Placings

	1989	1990	1991	1992	1993	1994	1995	1996	1997	Total
Original Samples[a]	29	20	33	26	40	53	56	72	63	392
Size/Industry Matched Firms[b]	27	16	29	25	36	45	45	58	59	340
Book-to-Market/Industry Matched Firms[c]	19	9	28	20	29	33	31	35	41	245
Size/Book-to-Market Matched Portfolios[b,c]	20	10	28	21	29	35	34	34	41	252

[a]This includes firms listed in the London Stock Exchange but excludes foreign currency issues, non-common equity issues, financial and utility firms.
[b]This excludes firms that do not have market capitalisation and return data in the LSPD database.
[c]This figure is smaller than the original sample due to non-inclusion of firms that do not have return data and book-to-market ratio in the LSPD and Worldscope database or firms with negative book-to-market ratio.

Table 3
Descriptive Statistics of the Aggregate Gross Proceeds (in £M) raised by UK SEOs (1989 – 1997)

Panel A   Rights Issues

	1989	1990	1991	1992	1993	1994	1995	1996	1997	Total
Number of Firms	61	53	120	53	113	94	63	72	41	670
	(67.8%)	(72.6%)	(78.4%)	(67.1%)	(73.9%)	(63.9%)	(52.9%)	(50.0%)	(39.4%)	(63.1%)
Total Amount Raised	2644.88	2133.27	7864.12	1887.92	6975.63	2849.65	2251.89	2911.02	1198.55	30716.93
	(69.5%)	(88.8%)	(93.4%)	(85.2%)	(93.0%)	(81.2%)	(80.4%)	(73.0%)	(60.4%)	(83.9%)
Maximum Amount Raised	486.00	532.00	572.00	241.60	1310.00	267.00	458.90	222.00	167.30	1310.00
Minimum Amount Raised	1.07	1.80	0.63	0.58	0.51	1.05	0.41	1.50	0.86	0.41
Median Amount Raised	13.84	15.68	17.95	16.30	18.80	15.20	14.30	15.20	14.60	16.05
Average Amount Raised	43.36	40.25	65.53	35.62	61.73	30.32	35.74	40.43	29.23	45.85

Panel B   Placings

	1989	1990	1991	1992	1993	1994	1995	1996	1997	Total
Number of Firms	29	20	33	26	40	53	56	72	63	392
	(32.2%)	(27.4%)	(21.6%)	(32.9%)	(26.1%)	(36.1%)	(47.1%)	(50.0%)	(60.6%)	(36.9%)
Total Amount Raised	1163.40	268.54	554.15	327.58	524.16	661.92	550.68	1074.87	785.04	5910.33
	(30.5%)	(11.2%)	(6.6%)	(14.8%)	(7.0%)	(18.8%)	(19.6%)	(27.0%)	(39.6%)	(16.1%)
Maximum Amount Raised	569.40	46.00	95.10	180.00	92.10	127.60	57.40	143.00	69.80	569.40
Minimum Amount Raised	0.70	1.45	1.33	0.40	0.44	0.90	0.39	0.27	0.88	0.27
Median Amount Raised	8.11	9.70	6.80	4.64	5.70	5.50	5.22	5.69	7.85	6.07
Average Amount Raised	40.12	13.43	16.79	12.60	13.10	12.49	9.83	14.93	12.66	15.12

Percentages for rights issues and placings out of the total SEO samples are in the parenthesis.

Table 4
Distribution of UK SEOs by Industry Sectors (1989-1997)

Industry Sector	No. of Rights Issues	Percentage (%)	No. of Placings	Percentage (%)
Oil, Gas and Mining Exploration and Production	39	5.8	28	7.2
General Manufacturing-Engineering	78	11.7	45	11.5
General Manufacturing-Building and Construction	78	11.7	24	6.1
General Manufacturing-Chemicals	26	3.9	8	2.0
Electric and Electronic Equipment	27	4.0	19	4.9
Food and Beverage Manufacturers	20	3.0	18	4.6
Clothing, Textile and Leather Manufacturers	26	3.9	15	3.8
Health Care and Pharmaceuticals	33	4.9	15	3.8
Distributors	44	6.6	30	7.7
Retailers and Wholesalers	47	7.0	26	6.6
Restaurants, Pubs and Hotels	29	4.3	15	3.8
Leisure and Entertainment	23	3.4	24	6.1
Transportation and Communication	33	4.9	20	5.1
Computer Hardware, Software and Services	27	4.0	23	5.9
Other Industries	140	20.9	82	20.9
Total	670	100	392	100

Figure 1
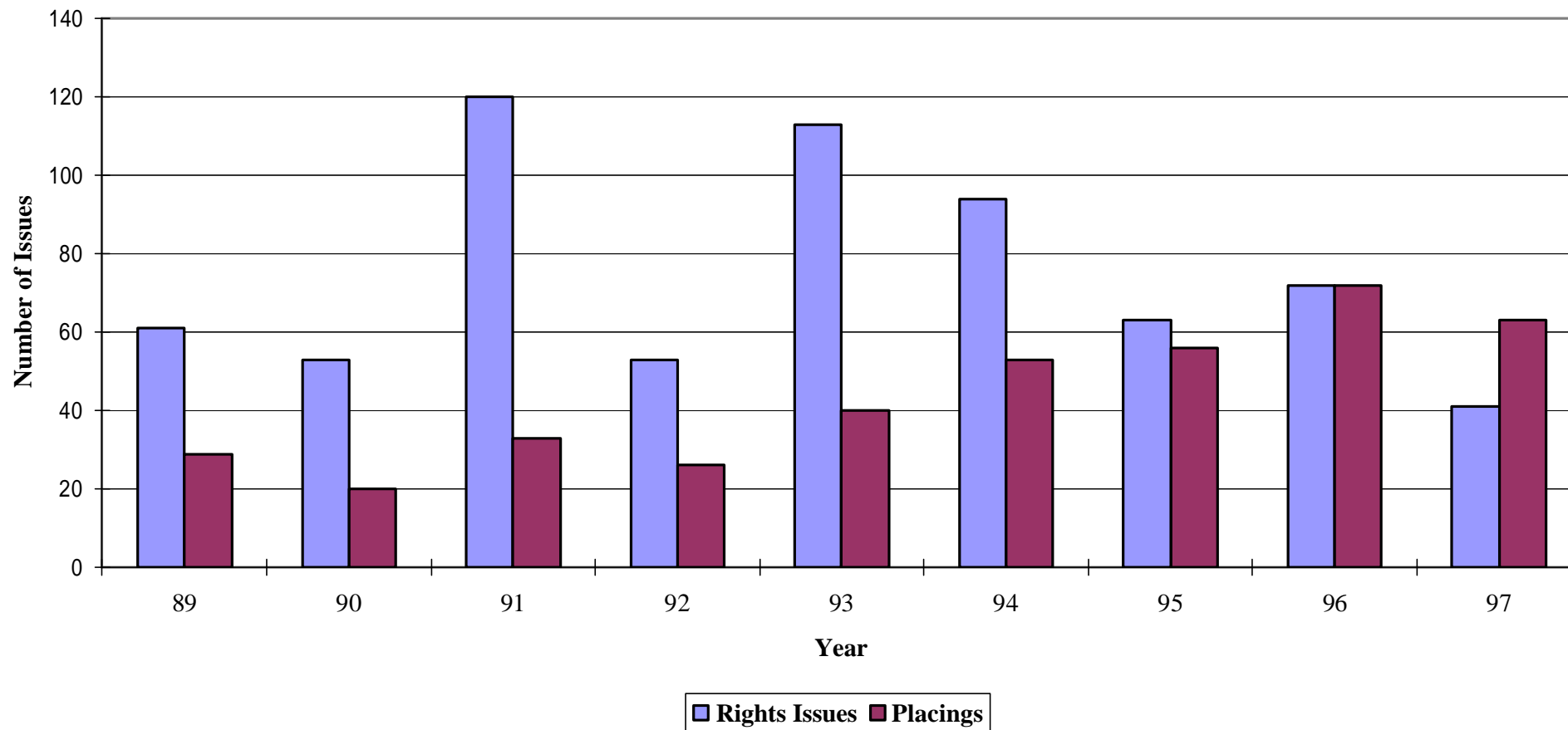**Number of UK SEOs by Year and Method of Issue**

Figure 2
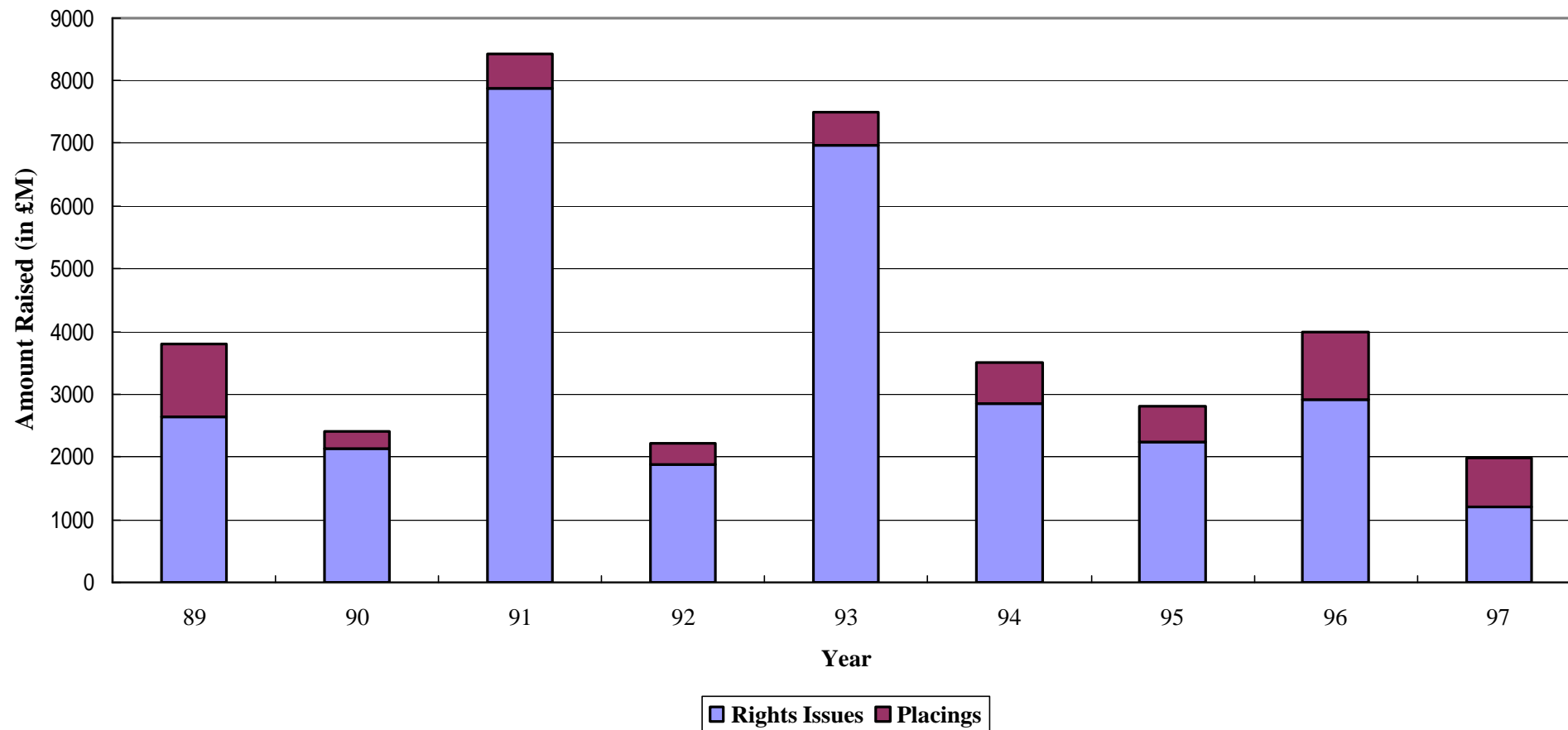**Aggregate Gross Proceeds (in £M) Raised by UK SEOs**

Table 5
Three Year Buy-and Hold Abnormal Return prior to and after SEO by Year
(Using Size/Industry Matched firms)

For each event firm, we find a matching firm in the same industry group which has the closest but higher market capitalization in the end of calendar year prior to the event year. We exclude firms that have SEOs in the previous 3 years before the event ye ar from the potential matching group. If the matching firm is delisted from the market, we redo the matching following the same procedure to find another matching firm to replace the first one. Further, if the firm that has been matched itself has a SEO within the 36 months of event study period, we replace it with a different buy similar matched firm. The pre-event 3-year BHRs for event firms are calculated until the month prior to the SEO announcements. The long-run post-event BHRs for event and matching firms are calculated starting from the month following the SEO announcements for 3 years (36 months). The long-run abnormal performance is measured using traditional BHAR. The BHAR for firm i over the period of T_1 and T_2, the following formula is used: $BHAR_{i,\tau}=\prod_{t=T_1}^{T_2}(1+R_{i,t})-\prod_{t=T_1}^{T_2}(1+R_{b,t})$ where $R_{i,t}$ is the total return of the sample firm in event month t, $R_{b,t}$ is the total return of the benchmark over the same period. The equal-weighted BHARs and the value-weighted BHARs according to the market capitalization of the corresponding event firm are in %.

| | Rights Issues | | | | | | | | Placings | | | | | | | |
| | Equal-Weighted | | | | Value-Weighted | | | | Equal-Weighted | | | | Value-Weighted | | | |
	No. Firm	Pre-Event BHR	Event BHR	Match BHR	BHAR	Pre-Event BHR	Event BHR	Match BHR	BHAR	No. Firm	Pre-Event BHR	Event BHR	Match BHR	BHAR	Pre-Event BHR	Event BHR	Match BHR	BHAR
1989	54	104.66	-24.88	-2.02	-22.86 (0.088)	120.90	-0.34	-14.74	14.40 (0.193)	27	121.43	-28.28	-10.24	-18.04 (0.103)	167.35	-3.81	17.72	-21.54 (0.016)
1990	50	52.87	0.99	35.84	-36.84 (0.105)	67.77	20.42	36.47	-16.05 (0.217)	16	23.62	-50.26	98.92	-149.18 (0.019)	84.96	-33.61	52.23	-85.84 (0.011)
1991	112	18.38	38.43	68.20	-29.76 (0.046)	43.68	25.08	46.87	-21.79 (0.022)	29	3.54	56.19	26.96	29.23 (0.298)	16.65	79.09	21.15	57.94 (0.024)
1992	48	6.43	26.62	61.98	-35.37 (0.016)	1.33	53.42	44.62	8.80 (0.248)	25	-8.52	62.07	68.41	-6.34 (0.859)	38.50	33.25	6.09	27.16 (0.234)
1993	102	52.27	38.77	47.97	-9.20 (0.437)	74.60	45.63	43.69	1.94 (0.765)	36	14.13	24.66	42.85	-18.19 (0.479)	68.26	17.42	11.93	5.49 (0.673)
1994	89	60.64	22.68	34.04	-11.36 (0.392)	94.61	39.87	41.99	-2.12 (0.834)	45	70.57	-1.13	22.51	-23.64 (0.163)	108.03	-0.28	14.47	-14.76 (0.352)
1995	63	74.22	44.30	50.97	-6.67 (0.811)	106.77	-0.40	16.27	-16.67 (0.113)	45	87.33	41.13	36.45	4.68 (0.858)	72.15	18.45	21.03	-2.58 (0.882)
1996	69	88.96	5.64	64.51	-58.86 (0.005)	130.03	18.32	67.07	-48.75 (0.010)	58	58.99	24.17	26.74	7.43 (0.773)	122.24	-8.30	-17.88	9.58 (0.538)
1997	40	83.64	92.04	34.23	57.81 (0.249)	174.09	131.28	72.65	58.62 (0.081)	59	34.64	53.37	55.30	-1.93 (0.968)	98.94	37.38	54.34	-16.96 (0.605)
Total	627	56.70	27.15	46.65	-19.50 (0.003)	77.28	32.05	40.58	-8.53 (0.036)	340	48.90	27.74	37.67	-9.93 (0.374)	110.20	10.32	18.51	-8.19 (0.226)

p-values are in the parenthesis.

Table 6
Three Year Buy-and Hold Abnormal Return prior to and after SEO by Cohort Year
(Using Book-to-Market/Industry Matched firms)

For each event firm, we find a matching firm in the same industry group which has the closest book-to-market in the end of the previous fiscal year. We exclude firms that have SEOs in the previous 3 years before the event year from the potential matching group. If the matching firm is delisted from the market, we redo the matching following the same procedure above to find the another matching firm to replace the first one. Further, if the firm that has been matched itself has a SEO within the 36 months of event study period, we replace it with a different but similar matched firm. The pre-event 3-year BHRs for event firms are calculated until the month prior to the SEO announcements. The long-run post-event BHRs for event and matching firms are calculated starting from the month following the SEO announcements for 3 years (36 months). The long-run abnormal performance is measured using traditional

BHAR. The BHAR for firm i over the period of T_1 and T_2, the following formula is used: $BHAR_{i,t} = \prod_{t=T_1}^{T_2}(1+R_{i,t}) - \prod_{t=T_1}^{T_2}(1+R_{b,t})$ where $R_{i,t}$ is the total return of the sample firm in event month

t, $R_{b,t}$ is the total return of the benchmark over the same period. The equal-weighted BHARs and the value-weighted BHARs according to the market capitalization of the corresponding event firm are in %.

| | Rights Issues | | | | | | | | Placings | | | | | | | |
| | Equal-Weighted | | | | Value-Weighted | | | | Equal-Weighted | | | | Value-Weighted | | | |
	No. Firm	Pre-Event BHR	Event BHR	Match BHR	BHAR	Pre-Event BHR	Event BHR	Match BHR	BHAR	No. Firm	Pre-Event BHR	Event BHR	Match BHR	BHAR	Pre-Event BHR	Event BHR	Match BHR	BHAR
1989	38	130.90	-11.75	-9.20	-2.55 (0.843)	128.72	3.27	6.04	-2.77 (0.721)	19	88.68	-18.73	-17.61	-1.12 (0.960)	189.30	0.98	-25.46	26.44 (0.008)
1990	41	58.15	3.18	102.87	-99.69 (0.034)	54.45	24.64	92.69	-68.05 (0.091)	9	75.90	-41.05	-11.45	-29.60 (0.308)	115.31	-19.79	-52.93	33.14 (0.162)
1991	99	25.43	43.14	63.82	-22.68 (0.142)	40.65	21.69	42.30	-20.60 (0.012)	28	7.03	54.03	46.91	7.12 (0.782)	26.66	80.33	36.10	44.23 (0.068)
1992	45	3.21	26.51	84.46	-57.95 (0.017)	-1.04	53.68	103.34	-49.66 (0.013)	20	-6.89	80.91	24.44	56.47 (0.138)	49.23	63.16	-9.00	72.17 (0.011)
1993	90	61.75	45.17	59.35	-14.19 (0.355)	75.07	45.47	52.25	-6.78 (0.524)	29	16.23	43.44	109.42	-65.98 (0.079)	68.42	25.03	51.06	-26.02 (0.158)
1994	78	70.91	35.94	37.92	-1.98 (0.897)	84.52	42.26	37.80	4.46 (0.705)	33	112.93	7.76	46.55	-38.79 (0.193)	121.68	11.98	43.90	-31.91 (0.280)
1995	49	91.37	57.22	61.21	-3.99 (0.905)	92.48	-0.71	-1.61	0.90 (0.952)	31	80.45	63.38	40.14	23.23 (0.430)	65.57	29.84	48.89	-19.05 (0.656)
1996	56	85.62	2.46	10.88	-8.42 (0.544)	86.98	16.62	32.38	-15.76 (0.341)	35	92.40	44.83	96.95	-52.12 (0.266)	134.12	-8.83	37.02	-45.85 (0.041)
1997	35	91.80	107.96	57.16	50.80 (0.424)	190.58	135.11	126.26	8.85 (0.913)	41	91.47	29.27	67.06	-37.79 (0.269)	142.16	41.36	72.79	-31.43 (0.338)
Total	531	63.26	35.28	52.91	-17.62 (0.031)	71.08	31.86	47.55	-15.69 (0.014)	245	65.73	35.33	54.94	-19.62 (0.104)	125.26	17.86	19.48	-1.62 (0.834)

p-values are in the parenthesis.

Table 7
Three Year Buy-and Hold Abnormal Return prior to and after SEO by Size
(Using Size/Book-to-Market Matched portfolios)

For each year, we rank all firms from the LSPD that have market capitalization in the end of the previous calendar year in the LSPD and book-to-market ratio in the end of the previous fiscal year in the Worldscope database. We exclude the firms in the size/book-to-market sorting that have issuances within the previous 3 years to avoid benchmark bias. We then allocate all firms into a 5×5 grid and calculate the 25 value-weighted portfolio returns each month. We match event firm to the portfolio with similar size/book-to-market characteristics. The pre-event 3-year BHRs for event firms are calculated until the month prior to the SEO announcements. The long-run post-event BHRs for event and matching firms are calculated starting from the month following the SEO announcements for 3 years (36 months). The long-run abnormal performance is measured using traditional BHAR. The BHAR for firm i

over the period of T_1 and T_2, the following formula is used: $BHAR_{i,t} = \prod_{t=T_1}^{T_2}(1+R_{i,t}) - \prod_{t=T_1}^{T_2}(1+R_{b,t})$ where $R_{i,t}$ is the total return of the sample firm in event month t, $R_{b,t}$ is the total return of the

benchmark over the same period. The equal-weighted BHARs and the value-weighted BHARs according to the market capitalization of the corresponding event firm are in %.

| | Rights Issues | | | | | | | | Placings | | | | | | | |
| | Equal-Weighted | | | | Value-Weighted | | | | Equal-Weighted | | | | Value-Weighted | | | |
	No. Firm	Pre-Event BHR	Event BHR	Match BHR	BHAR	Pre-Event BHR	Event BHR	Match BHR	BHAR	No. Firm	Pre-Event BHR	Event BHR	Match BHR	BHAR	Pre-Event BHR	Event BHR	Match BHR	BHAR
Size 1	67	-4.30	35.99	78.65	-42.66 (0.057)	-12.13	22.10	66.58	-44.49 (0.023)	73	6.30	61.20	69.12	-7.92 (0.790)	23.42	64.03	65.38	-1.35 (1.000)
Size 2	93	55.01	65.87	47.24	18.63 (0.352)	81.23	58.17	43.39	14.77 (0.434)	72	92.76	15.66	43.21	-27.55 (0.085)	114.84	12.46	43.60	-31.13 (0.054)
Size 3	111	86.28	27.13	44.97	-17.84 (0.191)	89.61	22.58	38.47	-15.89 (0.242)	57	127.26	32.95	35.42	-2.47 (0.906)	150.97	24.29	31.00	-6.71 (0.709)
Size 4	173	86.27	12.47	44.18	-31.71 (0.000)	91.17	15.61	43.82	-28.22 (0.000)	40	118.86	43.39	46.46	-3.08 (0.815)	127.17	36.30	46.19	-9.89 (0.403)
Size 5	118	76.29	40.66	54.82	-14.16 (0.342)	78.95	34.32	53.24	-18.92 (0.282)	10	100.38	7.13	40.34	-33.21 (0.083)	135.01	0.01	40.75	-40.75 (0.009)
Total	562	68.21	32.92	51.18	-18.26 (0.017)	81.12	31.15	51.07	-19.92 (0.006)	252	79.96	36.83	49.36	-12.53 (0.208)	131.01	16.36	41.75	-25.38 (0.000)

p-values, based on skewness-adjusted t-statistics, are in the parenthesis.

Table 8
Calendar-Time Portfolio Returns for SEOs using Fama-French 3-Factor Model (1989-1997)

We form the calendar-time portfolios for each month by including all firms that have SEOs within the last 3 years. We use the Fama-French 3-factor model: $R_{pt}-R_{ft}=a_i+\beta_i(R_{mt}-R_{ft})+s_iSMB_t+h_iHML_t+e_{it}$, where R_{pt} is the monthly return on the equally-weighted or value-weighted calendar-time portfolio, R_{ft} is the monthly return on one-month treasury bills, R_{mt} is the return on the value-weighted market portfolio, SMB_t is the difference in the returns of the portfolios of small stocks and big stocks and HML_t is the difference in the returns of the portfolios of high book-to-market stocks and low book-to-market stocks. Panel A includes all firms in the market that have data to form the Fama-French factors, while Panel B excludes event firms within the previous 3 years when constructing the Fama-French factors.

Panel A   Non-Purged Factors

	Rights Issues		Placings	
	Equal-Weighted	Value-Weighted	Equal-Weighted	Value-Weighted
Intercept	-0.0027 (0.185)	-0.0009 (0.734)	-0.0015 (0.594)	-0.0035 (0.164)
RMRF	1.1961(0.000)[+++]	1.1367 (0.000)[+++]	1.2160 (0.000)[+++]	1.1207 (0.000)[+++]
SMB	1.0304(0.000)[+++]	0.4893 (0.000)[+++]	1.1622 (0.000)[+++]	0.6923 (0.000)[+++]
HML	0.0567 (0.593)	-0.3760 (0.015)[++]	-0.2377 (0.100)	-0.3036 (0.021)[++]
Adjusted R^2	83.65	67.27	75.47	72.40

Panel B   Purged Factors

	Rights Issues		Placings	
	Equal-Weighted	Value-Weighted	Equal-Weighted	Value-Weighted
Intercept	-0.0038 (0.080)[+]	-0.0016 (0.585)	-0.0019 (0.524)	-0.0038 (0.141)
RMRF	1.2375 (0.000)[+++]	1.1564 (0.000)[+++]	1.2165 (0.000)[+++]	1.1305 (0.000)[+++]
SMB	1.0500 (0.000)[+++]	0.5285 (0.000)[+++]	1.1664 (0.000)[+++]	0.7079 (0.000)[+++]
HML	0.0970 (0.406)	-0.2842 (0.072)[+]	-0.1707 (0.288)	-0.2546 (0.074)[+]
Adjusted R^2	81.59	64.67	72.28	70.48

* p-values are in the parenthesis.
[+++]denotes 1% significant level, [++]denotes 5% significant level and [+]denotes 10% significant level.

Table 9

Calendar-Time Portfolio Returns for SEOs using Carhart's (1997) 4-Factor Model (1989-1997)

We form the calendar-time portfolios for each month by including all firms that have SEOs within the last 3 years. We use the Carhart's (1997) 4-factor model: $R_{pt}-R_{ft}=a_i+\beta_i(R_{mt}-R_{ft})+s_iSMB_t+h_iHML_t+p_iPR12_t+e_{it}$, where R_{pt} is the monthly return on the equally-weighted or value-weighted calendar-time portfolio, R_{ft} is the monthly return on one-month treasury bills, R_{mt} is the return on the value-weighted market portfolio, SMB_t is the difference in the returns of the portfolios of small stocks and big stocks, HML_t is the difference in the returns of the portfolios of high book-to-market stocks and low book-to-market stocks and $PR12_t$ is the difference in the return of the portfolio of winners and losers. Panel A includes all firms in the market that have data to form the 4 factors, while Panel B excludes event firms within the previous 3 years when constructing the 4 factors.

Panel A   Non-Purged Factors

	Rights Issues		Placings	
	Equal-Weighted	Value-Weighted	Equal-Weighted	Value-Weighted
Intercept	-0.0016 (0.492)	-0.0043 (0.159)	-0.0036 (0.233)	-0.0070 (0.010) [++]
RMRF	1.1721 (0.000) [+++]	1.2086 (0.000) [+++]	1.2625 (0.000) [+++]	1.1967 (0.000) [+++]
SMB	0.9922 (0.000) [+++]	0.6039 (0.000) [+++]	1.2363 (0.000) [+++]	0.8136 (0.000) [+++]
HML	-0.0031 (0.980)	-0.1785 (0.269)	-0.1219 (0.449)	-0.1141 (0.424)
PR12	-0.1054 (0.273)	0.3161 (0.016) [++]	0.2044 (0.116)	0.3343 (0.004) [+++]
Adjusted R^2	83.68	68.50	75.76	73.93

Panel B   Purged Factors

	Rights Issues		Placings	
	Equal-Weighted	Value-Weighted	Equal-Weighted	Value-Weighted
Intercept	-0.0028 (0.238)	-0.0050 (0.123)	-0.0056 (0.077) [+]	-0.0080 (0.004) [+++]
RMRF	1.2187 (0.000) [+++]	1.2261 (0.000) [+++]	1.3053 (0.000) [+++]	1.2201 (0.000) [+++]
SMB	1.0196 (0.000) [+++]	0.6410 (0.000) [+++]	1.2890 (0.000) [+++]	0.8473 (0.000) [+++]
HML	0.0510 (0.694)	-0.1138 (0.507)	0.0276 (0.872)	-0.0293 (0.843)
PR12	-0.0861 (0.412)	0.3190 (0.023) [++]	0.3616 (0.005) [+++]	0.4110 (0.000) [+++]
Adjusted R^2	81.54	65.82	73.72	73.19

* p-values are in the parenthesis.
[+++]denotes 1% significant level, [++]denotes 5% significant level and [+]denotes 10% significant level.

Table 10

Calendar-Time approach for the UK SEOs

using conditional Fama-French 3-Factor Model (1989-1997)

We adapt the approach in Eckbo, Masulis and Norli (2000) to run the conditional Fama-French 3-factor models as follows:

$$R_{pt+1} - R_{ft+1} = a_{0i} + A_i^{'} z_t + b_{0i}(R_{mt+1} - R_{ft+1}) + b_i^{'}(z_t(R_{mt+1} - R_{ft+1})) + s_{0i}SMB_{t+1} + S_i^{'}(z_t SMB_{t+1}) + h_{0i}HML_{t+1} + H_i^{'}(z_t HML_{t+1}) + x_{it+1}$$

. Z_t is the pre-

determined instrumental variables. Note that all the instrumental variables are demeaned and must be lagged to the left-hand side variable and the three factors. The lag can be more than one. The instrumental variables used in our study are monthly log difference of FTSE-All Share Index dividend yield, industrial production of manufacturing section, money supply (M0) and retail price index. The choice of lag for each instrumental variable depends on the cross correlation between the left-hand side variable and the instrumental variables. We use lag 1 for dividend yield, lag 2 for industrial production, lag 1 for money supply and lag 4 for retail price index.

	Rights Issues		Placings	
	Equal-Weighted	Value-Weighted	Equal-Weighted	Value-Weighted
Non-Purged Factors				
Unconditional Intercept	-0.0027 (0.185)	-0.0009 (0.734)	-0.0015 (0.594)	-0.0035 (0.164)
Conditional Intercept	-0.0028 (0.167)	-0.0020 (0.462)	-0.0037 (0.177)	-0.0062 (-0.017)[++]
Purged Factors				
Unconditional Intercept	-0.0038 (0.080)[+]	-0.0016 (0.585)	-0.0019 (0.524)	-0.0038 (0.141)
Conditional Intercept	-0.0037 (0.097)[+]	-0.0028 (0.336)	-0.0041 (0.149)	-0.0064 (0.011)[++]

* p-values are in the parenthesis.

[+++]denotes 1% significant level, [++]denotes 5% significant level and [+]denotes 10% significant level.