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THE TIMING OF SEASONED EQUITY OFFERINGS: EVIDENCE FROM UK MARKETS 1990–2002

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ABSTRACT

Financing decisions vary temporally and in cross-section, and are considered to reveal important information to market participants. The volume of seasoned equity offerings (SEOs) is not uniform over time and the existence of HOT (COLD) issue markets suggests the importance of "windows of opportunity" and "timing" to publicly listed firms. There has been some ambiguity as regards the relative importance of periods of equity overvaluation and macroeconomic conditions in driving SEO volumes and such empirical evidence as exists relates largely to US markets. We revisit this debate with specific reference to UK markets (1990–2002) and find that aggregate macroeconomic conditions largely drove SEO activity over the period. We uniquely identify the relevance of firms' reputation for credible disclosure in equity financing decisions.

INTRODUCTION

Growth and growth prospects underpin firm valuations in efficient capital markets, and public listing provides firms with ready access to financing for incremental investment. Financing decisions, particularly decisions to raise equity funding, are considered to reveal information regarding current financial position and future cash flow to the market (Myers and Majluf, 1984) and such actions frequently result in value adjustments as investors fine-tune assessments of value and growth potential. The decision to issue new equity when information asymmetry is severe may result in the funding decision being interpreted as reflecting poor cash flow or asset profitability. A marking down of equity value is a plausible consequence of such a decision. If information asymmetry is low, equity issues can be received positively by the market so that an issuing firm avoids (or attenuates) the negative abnormal returns (AR) that have been so extensively

documented around announcement of seasoned equity offerings (SEOs) (Eckbo and Masulis, 1995).

Firms that have established a reputation for credible communication with stakeholders ("saying, doing and delivering") can plausibly influence the information environment and thus limit the adverse selection problem associated with incremental financing. However, volatile markets and (macroeconomic) factors that are beyond the control of issuing firms or their investment advisors mean that phenomena such as "windows of opportunity" and "timing" have become critically important in seasoned equity issuance (Choe, Masulis and Nanda, 1993; Bayless and Chaplinsky, 1996). Such phenomena have given rise to the terms HOT (COLD) issue markets, defined as periods during which the volume of SEOs is notably high (low) respectively relative to normal issue volume.

Despite extensive empirical evidence on timing of equity issues in US markets, little research has been conducted into the timing of UK SEOs other than the seminal work of Marsh (1982) on incremental funding decisions, although valuation effects of seasoned issues in such markets have been documented (Barnes and Walker, 2006). Despite similarities in UK and US trading mechanisms, there is no necessary presumption that the timing of SEOs in these markets is motivated by identical concerns. Thus we consider that an analysis of recent UK seasoned issues that focuses on timing motivations is merited at this point and that such evidence would represent an interesting increment to the body of literature in the area. We also consider the merits of macroeconomic versus stock market-related definitions of HOT (COLD) issue markets over which there has been some ambiguity in the literature. Finally, we identify "information environment factors" stemming from firms' reputation for credible disclosure of corporate plans as a further potential factor influencing SEO timing and seek to integrate it into our model of the UK SEO story.

Our paper is structured as follows. The next section presents an analysis of the theoretical motivations for, and empirical evidence relating to, the timing of SEOs. This is followed by a section which describes our sample and the methodology we apply. The fourth section outlines the empirical results we obtain together with a discussion of these findings and their consistency with the extant literature. In the final section of the paper, we identify some limitations of the analysis together with some avenues for further study, and conclude.

LITERATURE REVIEW

A variety of factors potentially inform the equity issuance decision, including issues relating to mis-valuation, information asymmetry and moral hazard. The overvaluation hypothesis predicts that the probability of equity issuance by a firm is greatest when firm management perceives that share price is above its intrinsic or true value[1]. If periods of overvaluation occur, one would expect to observe a clustering of share issues within industries during that period of market buoyancy. Bayless and Chaplinsky (1996) find that the variables with the greatest explanatory power in predicting equity issues for a sample of US firms over the period 1974–

1983 were stock and market run-ups. Marsh (1982) examined a sample of 748 equity and debt issues by UK firms over the period 1959–1970 and found that historical share price performance and current stock market conditions importantly inform a firm's choice of equity over debt when incremental funding is sought. Jung, Kim and Stulz (1996) report similar evidence in respect of market to book ratios at issuance for their US sample, while Jindra (2000), basing his evidence on an earnings-related intrinsic value metric, reports that the average SEO firm experiences a strong share price run-up in the six months prior to issuance. Equally supportive is evidence in Loughran and Ritter (1995) and Speiss and Affleck-Graves (1995) of significant post-issue underperformance of US issuing firms, both relative to market capitalisation-matched non-issuers and to prior issuer share price performance, consistent with a market where firms take advantage of "windows of opportunity" to exploit over-optimism by investors.

An information asymmetry hypothesis assumes that insiders (managers) are relatively better informed about firm position and prospects than shareholders, particularly for smaller firms with less extensive analyst coverage (Vermaelen, 1981). Given that investors cannot uncover and verify the credibility of firm-specific information without cost and that moral hazard frequently prevents direct information transfers between managers and investors, issuing firms have a significant information advantage over market participants (particularly potential new investors) and this allows managers to exploit any mis-pricing by the market. Rational investors conclude that an equity issue reflects managerial perceptions of overvaluation (Myers and Majluf, 1984); this theory has been used to explain both the widespread negative valuation effects associated with announcements of initial and seasoned equity issues (Eckbo and Masulis, 1995; Ibbotson and Ritter, 1995), and the withdrawal of some SEOs subsequent to announcement (Mikkelson and Partch, 1988). More substantively, evidence by Pilotte (1992) and Denis (1994) for the US market and Burton, Lonie and Power (2000) for the UK market suggests that the negative market response to new equity financings is significantly and positively associated with proxies for (investment) growth opportunities, ARs at issue announcement being substantially more adverse for mature issuers vis-à-vis growth firms. Issuers may be motivated to "time the market" and to announce SEOs to exploit periods when information disparities are low.

Bayless and Chaplinsky (1996) define "windows of opportunity" as times when information costs are reduced for all firms. They compare announcement period abnormal price changes for high volume (HOT) vis-à-vis low volume (COLD) issue periods, adjusting for other factors known to influence ARs. They find that issuers in their sample did endeavour to take advantage of such low firm-specific information disparity periods, price changes being lower on average in HOT markets vis-à-vis COLD or normal issue periods and not being attributable to market or economic conditions. It seems clear that price reaction at announcement of an SEO depends critically on a firm's ability to signal value and intent, and in consequence to reduce adverse information costs[2]. Choe, Masulis and Nanda (1993) relate information asymmetry and timing of SEOs to business cycles as distinct from a focus on firm-specific information, as the volume of SEOs has

historically been greater during expansionary phases of the business cycle vis-à-vis business troughs (Berkovitch and Narayanan, 1993). They argue that investors are more optimistic regarding investment potential and value of assets-in-place vis-à-vis less expansionary phases (Myers and Majluf, 1984; Cooney and Kalay, 1993). Myers and Majluf further argue that business environment may impact on investors' assessment of managerial motivations for issue, leading managers to time issues according to when investors are most likely to interpret an issue positively. Choe et al. (1993) relate the relative frequency of SEOs to changes in business cycle variables (yield spreads and growth rates in leading, coincident and industrial production indicators), market prices and long- and short-term interest rates. Their results suggest that business cycle variables have significant explanatory power for issue frequency, interest rate variables being generally insignificant for industrials, albeit significant for utility issues. However, stock market volatility has a pervasive and significantly negative impact on offering risk, the expected costs imposed on firms by SEOs and in consequence issue volume. Business cycle variables and monthly issue volume are also found to have significant explanatory power for the magnitude of announcement period ARs for industrial issuers, consistent with less investor concern regarding overvaluation during economic expansions. This may partly be attributed to a perception that firms have more high quality projects during business booms.

Resolving information disparity is the route to accurate valuation of a firm's securities[3] and the nature of the information environment associated with an issuing firm is critical to the timing decision. Credibly conveying firm-specific information is particularly problematic for young and developing firms about which typically little is known. Firm-specific information releases are one of the principal means utilised by firms to signal value and Rangan (1998) has documented the packaging of SEO announcements with positive information releases such as earnings announcements. Hansen and Crutchley (1990) and Loughran and Ritter (1997) provide evidence of significant earnings management around SEO announcements. Loderer and Mauer (1990), Ruland, Tung and George (1990) and Dierkens (1991) investigate the bunching of SEO announcements subsequent to various information-releasing events such as dividend announcements or sales forecasts. They find evidence of a positive relation between the volume of SEO announcements and such firm-specific information releases.

Vital necessary information transfers may also be conducted through firms developing and maintaining close relationships with analysts and reputable investment bankers, and using analyses of trading activity to deliver tailored messages to different investor groups, a point which is raised by Holland (2001). In essence, what firms can seek to do is to improve the visibility of their company through explaining their business, growth and strategy to investors, within the constraints of the evolving regulation on company disclosures. There is risk of moral hazard of course, as discussed by Jensen (1986), if managerial incentives are not appropriately aligned with those of shareholders. Holland argues, however, that if managers take a long-term perspective on firm strategy they will recognise

that any attempt to exploit investors in the short term will be penalised when the true quality of a project is revealed. The only means of ensuring a steady source of investment funding in the long run is through developing a *reputation for credible*, timely information disclosure, that is, a reputation for "saying, doing and delivering". His thesis is that SEO (timing) decisions are critically influenced not only by macroeconomic, stock market and firm-specific factors but also by reputation factors, SEOs being more likely for firms that have established a reputation for high quality investor relations (IR) and are so rated by analysts. While we know of no evidence in respect of such a reputation thesis, we would expect to observe a clustering of SEOs by firms with a positive IR record, *ceteris paribus*, and less adverse market reaction to such issues vis-à-vis issues of firms with lesser reputations.

In summary, the extant literature indicates a critical relationship between the information environment and incremental funding decisions by firms, SEO announcements and their timing being importantly influenced by firm-specific information factors, the macroeconomic environment, perceptions of mis-valuation and a firm's ability to signal true value successfully to the market. Our analysis will focus on UK SEOs, in light of the dearth of empirical evidence to date on this important market.

DATA AND METHODOLOGY

The main objective of our analysis is to investigate, illustrate and explain any variation in the volume of SEOs over time for the UK market in the context of business cycle, stock market and firm-specific information variables, recognising that the information environment surrounding a firm may have a major influence on the timing of equity issuance. Consistent with the extant literature, our proxy for general information costs are the ARs that accrue at issue announcement and we investigate whether mean event date ARs are significantly different across HOT and COLD markets as classified in accordance with aggregate issue volume and macroeconomic conditions. If firms can successfully time equity issues to coincide with HOT markets, we expect mean ARs to be significantly less negative during HOT markets vis-à-vis periods of lower issue volume.

Our study investigates 1,220 SEOs by firms listed on the London Stock Exchange (LSE) between January 1990 and December 2002[4], a period chosen to incorporate both expansionary and contractionary phases of the business cycle. Our sample excludes initial and secondary offerings of shares and offerings of convertible bonds; we also exclude bonus and scrip issues. The LSE New Issues List was our source for details of new share issues of firms already publicly listed; detail obtained from this source included issue proceeds, the number of shares issued, and issue expenses incurred. An SEO was included in the final sample if: (a) that firm's securities were listed either on the LSE or the Alternative Investment Market (AIM)[5] at the announcement date; (b) the date of public announcement of the issue was available in the Primark Extel News Card network, available on Global Access; and (c) the firm was neither a public utility nor a financial

institution. For the purposes of computing ARs, we apply standard (market model) event study methodology (Armitage, 1995). Specifically we estimate "normal" or "expected returns E(r)" over a 125-trading day period commencing (concluding) 227 (12) trading days before issue announcement, using the FTALLSH Value-Weighted Index as our benchmark (proxy for the) market return. As we are confident of accurate identification of the issue announcement date for firms in our sample, we define the announcement event period tightly as (t_{-1},t_0), recognising that in event study methodology arguably the most critical feature is the accurate isolation of the event itself, which facilitates more powerful tests of whether significant price changes occur (Thompson, 1995). ARs are simply the excess returns observed over this announcement period relative to the daily E(r) over the estimation period[6]. Daily share prices, adjusted for capital changes, and market price data were obtained from the Datastream Advance database. We drop four firm observations from our initial sample for data error reasons; in consequence our final sample consists of 1,220 observations, comprised of single or multiple SEOs across 398 firms, corresponding to a mean number of SEOs per firm of approximately three.

A variety of regularly scheduled financial and non-financial economic indicators, which reflect changing information about future economic conditions and are closely monitored by both investors and firms, are released by UK government agencies and spark sizeable and predictable market movements on publication. Such metrics as the Purchasing Managers Indicator (PMI) and Total Industrial Production potentially proxy for stage of the business cycle. However, in light of the increasing proportion of total production attributable to services vis-à-vis manufacturing over the period of our analysis, together with the absence of any data on the PMI prior to 1992, we select Real GDP (which is both timely and not subject to excessive revision) as the reference series for compilation of our business cycle indicator to identify business cycle expansions and contractions. Nominal GDP measures the market value of goods and services produced by factors of production located within a country – in this case Real GDP is obtained by deflating nominal GDP by the general Retail Price Index (RPI), the main domestic measure of inflation in traded goods and services. Real GDP is widely held to be the most effective measure of aggregate economic activity and is closely monitored by the business community. Datastream Advance was also our source for quarterly information on economic indicators (Retail Price Index, Gross Domestic Product, Index of Industrial Production, Rate of Unemployment and Retail Sales Volume).

Firm-specific information variables are difficult to isolate and a variety of firm characteristics potentially proxy for the degree of establishment of a firm and, in consequence, its purported reputation for disclosure credibility. Firm size or age could usefully proxy for this effect as could membership of the main LSE list or its constituents such as the FTSE100 or FTSE250. We are mindful of the reality that actual financing decisions of firms are the outcomes of complex processes subsuming a variety of motives, constraints, forces and self-interests, and of the argument that econometric variables and models frequently tell interesting stories, but are imperfectly related to an underlying theoretical model. In essence, many

purely quantitative variables and models are blunt tools for capturing real life decisions of firms and trading patterns of market participants and, frequently, qualitative variables may enhance the explanatory power of purely econometric models. Thus we choose here to adopt a softer approach, and so the body of equity analysts that closely monitor and engage with the issuing firms in our sample were asked for an indication of these firms' rating with respect to timeliness, consistency and credibility of information disclosures. Analysts were asked to award a rating of one to five to each firm covered, across each disclosure measure, so that each firm received a total rating between 3 and 15, and an analyst's overall ratings could then be ranked. An issuing firm's aggregate rating across all covering analysts was classified as High (Medium) [Low] if it was on average rated in the upper (median) [lower] third of all firms followed by these analysts for disclosure reliability. In all, we surveyed 120 analysts that actively follow FTSE350 companies, as all issuing firms were constituents of that list, and received replies from 70, a response rate of approximately 58 per cent. Although not all responding analysts actively followed all issuing firms in our analysis, there was no incidence of an issuing firm that was without some analyst monitoring for our sample of UK issuers. On average, analyst coverage was approximately 28 (seven per cent) of sample firms[7].

Following Bayless and Chaplinsky (1996) and Choe et al. (1993) we utilise both aggregate SEO volume and business cycle variables respectively to identify HOT and COLD issue markets[8]. A key feature of the former approach is that it renders macroeconomic variables as exogenous influences on the existence of "windows of opportunity" so that their explanatory power for the temporal variation in information costs can be investigated directly. To facilitate comparability with the Bayless and Chaplinksy approach, three definitions of equity issue volume are utilised to classify the sample period into HOT and COLD issue markets: Nominal Sterling (stg£N); Real Sterling (stg£R); and Scaled Issue Volume. Nominal Sterling Value is the quarterly gross issue proceeds, the number of shares issued times offer price, aggregated across all issuers in that quarter. Real Sterling Value is computed as quarterly nominal issue volume adjusted for changes in the (quarterly) RPI. Scaled Issue Volume is defined as quarterly nominal issue volume multiplied by 10^5, scaled by total quarter-end equity market capitalisation for LSE listed firms. We particularly like this latter measure as it adjusts for changes both in price level and in the size of the corporate sector as a whole. HOT (COLD) issue markets are deemed to occur where scaled SEO volume is greater (less) than median value. For our classification by macroeconomic variables, we identify the median of our Real GDP reference series as a summary measure of "standard" UK economic activity, with quarters exhibiting a figure above (below) median being classified as expansions (contractions) respectively.

Bayless and Chaplinsky (1996) use aggregate SEO volume to distinguish between HOT and COLD markets, while Choe et al. (1993) focus on aggregate economic conditions as the basis for their market issue volume classifications. In order to take on board both methodological approaches and to seek to differentiate between their relative merits, our analysis of the timing of UK SEOs incorporates a number of strands. To determine initially whether aggregate economic conditions

are useful differentiators of the UK seasoned issuance market we compute changes in the main economic indicators as follows:

$$V_{t-1} \Big/ \overline{V_{t-9}} \qquad [1]$$

where V_{t-1} = Economic indicator value in the quarter prior to SEO announcement and

$\overline{V_{t-9}}$ = Mean value of economic indicator in the nine quarters previous to the SEO announcement quarter

and relate changes in the main economic indicators to SEO volume as follows:

$$Vol_t = \alpha + \beta_1 CBI_t + \beta_2 IIP_t + \beta_3 UN_t + \beta_4 SV_t + u_t \qquad [2]$$

where Vol_t = SEO volume in period t (calculated per the three definitions of SEO volume discussed above);

α = intercept;

β_i = coefficient on explanatory variable i;

CBI = Confederation of British Industry Business Survey measure of business optimism;

IIP = Index of Industrial Production;

UN = Unemployment rate percentage of the labour force out of work;

SV = Retail Sales Volume;

u_t = error term for period t.

and all explanatory variables are relative to the mean corresponding economic indicator over the nine quarters prior to the SEO announcement quarter. For simplicity we continue to use the original indicator name but note that "relative to" is implied[9].

Given the observed and documented temporal variation in the volume of US SEOs over time, together with evidence that those SEOs tend to occur following significant stock and market run-up, we also explore more closely the relation between SEO volume and the level of the stock market for our UK sample, utilising our three measures of (quarterly) SEO volume as discussed earlier:

$$Vol_t = \alpha + \beta Level_{t-1} + u_t \qquad [3]$$

where Vol_t = SEO volume in period t;

$Level_{t-1}$ = the midpoint between the opening and closing levels of the FTSE AllShare index in the quarter prior to issue announcement[10];

u_t = error term.

The adverse share price reaction at SEO announcement is widely regarded as a proxy for information costs in the market for seasoned issues, so that periods of less negative share price reaction should theoretically be associated with higher aggregate equity issue volume, it being more cost effective for firms to undertake SEOs when information costs are at a minimum. The strength of the relation between ARs and SEO volume is assessed, for both HOT and COLD market classifications, as follows:

$$AR_{(-1,0)} = \alpha + \beta_1 HOT + \beta_2 COLD + u_t \qquad [4]$$

where $AR_{(-1,0)}$, = abnormal returns for event period ($t_{-1,0}$);
α = intercept term;
HOT = a dummy variable having value 1 if the equity issue occurs during a HOT market and 0 otherwise;
COLD = a dummy variable which equal 1 if the issue occurs during a COLD market and 0 otherwise;
u_t = error term for period t.

and an issue is deemed to occur into a HOT (COLD) market if issue volume was in the upper (lower) third relative to normal issue volume.

If macroeconomic conditions have a substantial impact on investor sentiment, and investors are presumed to be more sensitive to overvaluation during economic contractions, the stage of the business cycle should have a direct effect on the magnitude of the price reaction to SEO announcements. We relate changes in macroeconomic variables, as computed per equation [1] above, to ARs at SEO announcement in order to ascertain whether changes in investment profitability and uncertainty regarding the value of assets-in-place have an important impact upon the severity of announcement date price reaction:

$$AR_{(-1,0)} = \alpha + \beta_1 CBI_t + \beta_2 IIP_t + \beta_3 UN_t + \beta_4 SV_t + u_t \qquad [5]$$

where $AR_{(-1,0)}$ = abnormal returns at announcement of SEO;
α = intercept term;
β_i = coefficient on explanatory variable i;
CBI = Confederation of British Industry Business Survey measure of business optimism;
IIP = Index of Industrial Production;
UN = Unemployment Rate percentage of the labour force out of work;
SV = Retail Sales Volume;
u_t = error term for period t.

Finally, in order to assess the incremental explanatory power, if any, of our firm-specific information environment/IR metric, we include an additional (independent) dummy variable in equation [5] above:

$$AR_{(-1,0)} = \alpha + \beta_1 CBI_t + \beta_2 IIP_t + \beta_3 UN_t + \beta_4 SV + \beta_5 D_{1t} + u_t \qquad [6]$$

where dependent and independent variables are defined as above and D_1 is a dummy variable taking a value of 1 if an issuing firm is rated "IR high" on average across surveyed analysts, and 0 otherwise[11].

Appropriate use of parametric hypothesis tests requires that the error terms in our regression models be independent and normally distributed, to avoid possible overstatement of significant effects. We compute and report non-parametric test statistics here based on distribution medians, these being more conservative and, in consequence, less prone to type I and/or type II errors. We apply a variance inflation factor (VIF) to detect the presence of multicollinearity which we find not to be problematic for our sample. Equally, we fail to uncover an abnormally high goodness of fit measure (R^2) in combination with insignificant model coefficients. This would also suggest the presence of multicollinearity. We also make the White (1980) adjustment/check for heteroscedasticity and find that the error terms in our regression results are indeed stationary.

RESULTS

Our analysis in large measure focuses on the different selection criteria that have been employed to explain the variation in SEO volume over time, the differential market reaction to such seasoned issues and whether it can be explained by either stock market trends or by macroeconomic criteria. A key advantage of the Bayless and Chaplinsky (1996) approach is that it facilitates a broader empirical analysis – macroeconomic conditions are limited to a role exerting exogenous impact on the issue decision so that their impact can be assessed separately. A comparison of HOT and COLD markets by definition indicates that such identification is largely independent of the issue volume computation. In excess of 50 per cent of the quarters studied secured the same classification irrespective of the approach utilised to define issue volume.

However, in our analysis, we choose to focus on Scaled Issue Volume in our analysis of the effectiveness of the various selection criteria as we consider it important to take account of both inflation and growth in the corporate sector, which this measure achieves. ARs have been shown to be related to offering size, so a given percentage increase in outstanding equity clearly changes as the corporate sector expands. An initial consideration of our sample also indicates relatively little overlap between the selection criteria employed. HOT and COLD markets for our sample, defined in accordance with Bayless and Chaplinsky's (1996) issue volume criteria, do not coincide much with expansionary phases of the business cycle (macroeconomic conditions) as defined by Choe et al. (1993). While

this lack of overlap is consistent with findings of Bayless and Chaplinsky, this does not suggest that macroeconomic conditions are irrelevant to issue volume or ARs, rather that they do not exclusively motivate firms to undertake an SEO. Our market model ARs at SEO announcement are consistent with the extant literature - our analysis yields mean (-2.8 per cent) and median (-1.97 per cent) ARs which are significantly negative at the five per cent level for the announcement period for the full sample. Interestingly, when we partition according to the IR variable, issuing firms that merited a "high IR" rating (247, or approximately 20 per cent, of all issues) incurred significantly less negative ARs (mean -1.43 per cent, median -1.08 per cent) at issue announcement vis-à-vis medium and low rated issuers (mean -3.12 per cent, median -3.01 per cent). There seems to be no significant association between ARs at issue announcement and projected use of those funds for our sample - announcement of an SEO aimed at raising funds for capital investment or for paying down debt produced no more favourable market reaction than an SEO to raise funds for working capital or to supplement cash flow. While the highest individual analyst ratings were earned by lower capitalisation firms, we find no significant firm size or industry effect overall. **Table 1** documents the results of our analysis of the relation between SEO volume and macroeconomic indicators:

TABLE I: SEO VOLUME AND MACROECONOMIC VARIABLES

Dependent Variable	Explanatory Variables	Coefficient	P-Value	R^2
$Vol_{Nominal}$	CBI_t	4.29	0.045*	27.8%
	IIP_t	7194	0.032*	
	UN_t	-127.01	0.07	
	SV_t	176.73	0.026*	
Vol_{Real}	CBI_t	64.77	0.045*	13%
	IIP_t	4848.6	0.047*	
	UN_t	-256.7	0.069	
	SV_t	350.09	0.047*	
Vol_{Scaled}	CBI_t	3.92	0.019*	45.4%
	IIP_t	2810	0.05*	
	UN_t	-80.94	0.083	
	SV_t	545.1	0.038*	

$Vol_{Nominal}$ = Nominal SEO Volume; Vol_{Real} = Real SEO Volume;
Vol_{Scaled} = Scaled SEO Volume; CBI_t = CBI Business Survey;
IIP_t = Index of Industrial Production; UN_t = Rate of Unemployment;
SV_t = Retail Sales Volume.
** indicates significance at the five per cent level.*
2-tailed tests of significance are used throughout.

With the exception of the unemployment rate, all of our explanatory variables are significant at the five per cent level (and in the predicted direction). These findings that macroeconomic variables may reliably be associated with variations in SEO volume over time are consistent with Moore (1980), Hickman (1953) and Choe et al. (1993) who severally find that the frequency of SEOs increases with positive changes in macroeconomic metrics. The weaker relation with the unemployment rate may be due to the lagged nature of this variable and the fact that it tends to exhibit a delayed response to changes in aggregate economic conditions. Firms generally wait until demand has strengthened over a number of quarters before hiring new staff; equally, a new issue is likely to be announced and conducted with incremental funding in place before firms make labour investment decisions[12]. We explore the role played by the general level of the UK stock market in the issue decision of UK firms - the early evidence of Marsh (1982) and Taggart (1977) points to a significant positive influence of prior stock market performance on UK incremental funding decisions, which suggests that investment and financing decisions of firms are inextricably linked to dynamic conditions in capital markets. We relate the average level of the FTSE AllShare index in the quarter prior to issue to all three of the metrics for SEO volume. **Table 2** presents the results of this aspect of the analysis:

TABLE 2: SEO VOLUME AND STOCK MARKET LEVELS

Dependent Variable	Explanatory Variable	Coefficient	P-Value
$Vol_{Nominal}$	$Level_{t-1}$	1.483	0.268
Vol_{Real}	$Level_{t-1}$	1.194	0.880
Vol_{Scaled}	$Level_{t-1}$	0.5575	0.414

$Vol_{Nominal}$ = Nominal SEO Volume; Vol_{Real} = Real SEO Volume; Vol_{Scaled} = Scaled SEO Volume; $Level_{t-1}$ = Average level of the FTSE AllShare Index in the quarter prior to issue.
2-tailed tests of significance are used throughout.

The coefficient values suggest a positive, albeit insignificant, relation between issuance volume and the level of the stock market - equity issuance appears to increase in accordance with overall stock mark[illegible] performance, but we cannot conclude that issue decisions on average are syste[illegible]atically driven by stock market run-ups prior to issue for our sample of UK SEOs. We find this surprising in light of the significant relation between our proxies for [illegible]acroeconomic conditions and SEO volume, and the widely held belief that the general level of the stock market increases during expansionary phases of the business cycle. Indeed, Korajczyk, Lucas and MacDonald (1990) [illegible]document evidence of clustering of equity issues following a run-up in equit[illegible] markets. This finding does, however, call into question the market timing [illegible]eory of seasoned issuance; firms in our sample appear not to be motivated in [illegible]he main by market valuations when they consider incremental equity funding.

We explore the impact of equity issue volume on ARs in order to assess the importance, if any, of information costs on the issue decision. Essentially, we seek to ascertain whether firms time their SEOs to lessen the effect of time varying asymmetric information. **Table 3** reports the findings in this regard:

TABLE 3: ABNORMAL RETURNS AND SEO VOLUME

Dependent Variable	Explanatory Variable	Coefficient	P-Value	R^2
$AR_{(-1,0)}$	$HOT_{nominal\ volume}$	0.00081	0.049*	9.2%
	$COLD_{nominal\ volume}$	–0.01090	0.037*	
$AR_{(-1,0)}$	$HOT_{real\ volume}$	0.01575	0.03*	7.3%
	$COLD_{real\ volume}$	–0.02688	0.021*	
$AR_{(-1,0)}$	$HOT_{scaled\ volume}$	0.03017	0.012*	12.8%
	$COLD_{scaled\ volume}$	–0.03465	0.023*	
$AR_{(-1,0)}$	$HOT_{real\ GDP}$	0.01224	0.05*	11.5%
	$COLD_{real\ GDP}$	–0.03481	0.029*	

$HOT_{Nominal}$ = A dummy variable taking on a value of one if the equity issue takes place in a HOT market (defined in accordance with the Nominal Sterling definition of equity issue volume);
$COLD_{Nominal}$ = A dummy variable taking on a value of one if the equity issue takes place in a COLD market (defined in accordance with the Nominal Sterling definition of equity issue volume);
HOT_{Real} = A dummy variable taking on a value of one if the equity issue takes place in a HOT market (defined in accordance with the Real Sterling definition of equity issue volume);
$COLD_{Real}$ = A dummy variable taking on a value of one if the equity issue takes place in a COLD market (defined in accordance with the Real Sterling definition of equity issue volume);
HOT_{Scaled} = A dummy variable taking on a value of one if the equity issue takes place in a HOT market (defined in accordance with the Scaled definition of equity issue volume);
$COLD_{Scaled}$ = A dummy variable taking on a value of one if the equity issue takes place in a COLD market (defined in accordance with the Scaled definition of equity issue volume);
$HOT_{RealGDP}$ = A dummy variable taking on a value of one if the equity issue takes place in a HOT market (defined in accordance with the Business Cycle based selection criterion);
$COLD_{RealGDP}$ = A dummy variable taking on a value of one if the equity issue takes place in a COLD market (defined in accordance with the Business Cycle based Selection Criteria).
** indicates significance at the five per cent level*
2-tailed tests of significance are used throughout.

These results indicate that ARs, our proxy for information costs, are importantly influenced by the seasoned issue market, regardless of our definition of HOT and COLD markets as defined in accordance with the Bayless and Chaplinsky (1996) market volume criteria, or, indeed, as defined in accordance with Choe et al. (1993) business cycle variables as represented by the Real GDP metric. Our findings are therefore consistent with those which suggest that if the level of information asymmetry varies between HOT and COLD markets, then it is also possible that market reaction to seasoned issues will be time varying in a manner consistent

with concerns for the costs of adverse selection. When firms face less severe adverse selection costs, equity issue volume is predicted to increase, and mean ARs are consistently less negative for issues that occur in HOT vis-à-vis COLD issue markets. The goodness of fit measures are moderate at best (and higher where issue market conditions are defined according to scaled issue volume and real GDP measures) which is unsurprising - we recognise that a variety of drivers of ARs exist beyond issue market conditions and quarterly GDP, and that a variety of factors influence the issue decision.

Aggregate economic conditions may influence a firm's ability to time an SEO effectively as a direct result of their impact on financial market sentiment. We investigate this phenomenon of timing by applying regression equation [5] above to the sample, results for which are presented in **Table 4**. We include both mean ARs, computed according to standard event study (market model) methodology, and, for comparative purposes, market-adjusted mean ARs (where AR_i for an issuing firm is obtained by deducting the market return from the issuing firm's return for the announcement period).

TABLE 4: ABNORMAL RETURNS AND MACROECONOMIC VARIABLES

Dependent Variable	Explanatory Variable	Coefficient	P-Value	R^2
$AR_{(-1,0)-Mkt\ Adj}$	CBI_t	0.027	0.05*	11.8%
	IIP_t	0.965	0.035*	
	UN_t	–0.015	0.01**	
	SV_t	0.691	0.043*	
$AR_{(-1,0)-Mkt\ Model}$	CBI_t	0.013	0.047*	9.3%
	IIP_t	0.474	0.05*	
	UN_t	–0.0128	0.009**	
	SV_t	0.341	0.039*	

CBI_t = CBI Business Survey; IIP_t = Index of Industrial Production;
UN_t = Rate of Unemployment; SV_t = Retail Sales Volume;
$AR_{(-1,0)-Mkt\ Adj}$ = Market-adjusted abnormal return across event period (t_{-1},t_0) using the Market Adjusted Approach;
$AR_{(-1,0)-Mkt\ Model}$ = Market model abnormal return across event period (t_{-1},t_0).
, indicate significance at the five per cent and one per cent level respectively. 2-tailed tests of significance are used throughout.*

Our results provide some insight into the question of whether the widely documented negative market reaction to news of SEO announcements may be explained even in part by contemporaneous changes in macroeconomic variables, *that is, whether market participants are influenced in their reaction to announcements of seasoned equity issues by aggregate economic conditions. For* our sample of UK seasoned issuers, macroeconomic conditions are found to have

an important influence on investor sentiment and, in consequence, information costs for which ARs proxy. Consistent with Choe et al. (1993), investors appear to be more confident and optimistic during expansionary phases of the business cycle, our positive and significant coefficients suggesting that favourable economic conditions are an important influence on the magnitude of adverse market reaction to seasoned issues during HOT vis-à-vis COLD issue markets. As predicted, the rate of unemployment (UN) is negatively and significantly associated with ARs, larger numbers out of work apparently acting as a drag on business and investor sentiment and implying more adverse market reaction to seasoned issues.

When we incorporate the firm-specific information variable IR (information environment factors stemming from firms' reputation for credible disclosure of corporate plans) into the analysis of ARs as a further potential factor influencing SEO timing, the priors are confirmed. The positive and significant relation between mean ARs and the IR dummy variable suggests that firms that have built up a positive reputation for credible disclosure, and which subsequently announce a seasoned equity issue, are found to incur significantly less negative ARs at announcement than those firms which merit only an average or low IR rating by analysts. **Table 5** presents our results in this regard:

TABLE 5: ABNORMAL RETURNS AND MACROECONOMIC VARIABLES

Dependent Variable	Explanatory Variable	Coefficient	P-Value	R^2
$AR_{(-1,0)\ -\ Mkt\ Adj}$	CBI_t	0.033	0.05*	18.5%
	IIP_t	0.91	0.039*	
	UN_t	–0.023	0.01**	
	SV_t	0.722	0.048*	
	D_{It}	0.918	0.01**	
$AR_{(-1,0)\ -\ Mkt\ Model}$	CBI_t	0.024	0.04*	16.9%
	IIP_t	0.511	0.048**	
	UN_t	–0.0218	0.009**	
	SV_t	0.399	0.032*	
	D_{It}	0.844	0.015*	

CBI_t = CBI Business Survey; IIP_t = Index of Industrial Production;
UN_t = Rate of Unemployment; SV_t = Retail Sales Volume; D_{It} is a dummy variable taking a value of 1 if an issuing firm merits an analyst rating of high for disclosure credibility, and 0 otherwise.
$AR_{(-1,0)\ -\ Mkt\ Adj}$ = Market Adjusted Abnormal Return across event period day (t_{-1},t_0) .
$AR_{(-1,0)\ -Mkt\ Model}$ = Market Model Abnormal Return across event period (t_{-1},t_0).
, indicate significance at the five per cent and one per cent levels respectively.*
2-tailed tests of significance are used throughout.

In no case were either coefficients or significance levels for our other explanatory variables changed in any meaningful way by the inclusion of this additional information environment metric, and the overall goodness of fit for the model was substantially improved, suggesting that incorporation of this additional metric constitutes a useful increment to our model.

As is the case with any empirical investigation, the reliability of the inferences we draw is determined by the effectiveness of our proxies for firm-specific and market characteristics. We endeavour to capture the several influences on issue timing adequately by incorporating both the Bayless and Chaplinsky (1996) and Choe et al. (1993) approaches, but recognise that alternative indicators of favourable issue conditions may be proposed; Ritter (1984), for example, associated opportune issue conditions with periods of high initial returns. We accept also that the use of ARs as a proxy for asymmetric information may be problematic.

The role of information asymmetry is difficult to capture and a variety of metrics potentially suggest themselves in this regard. Karpoff (1987) proposed the elimination of price observations during heavy trading volume periods from the ARs estimation period as a proxy for firm-specific information releases. We recognise the possible bias in the fit of our model (elimination of such observations increases the likelihood of finding significant event period price effects) but argue that discovery of a significant IR effect potentially provides a useful incremental explanatory tool in the analysis of the timing of seasoned equity decisions. Our IR metric implicitly assumes that analysts and investors are rational, that markets are efficient and that incremental financing events and firm information disclosures prompt price reactions that are detectable through background noise. In effect, we abstract from the possibility of "whims of investor sentiment" wherein trading strategies are correlated across noise traders (Schleifer and Summers, 1990). Our definition of IR centres on firms that have built a reputation for credible disclosure over time, thus avoiding the criticism that firms might "package" SEO announcements with positive firm specific disclosures on a once-off basis in an effort to minimise the adverse selection effects of equity issuance.

Consistent with our acceptance of rational markets, we assume also that investment and financing decisions are independent of such factors as firm adoption of "natural operating cycles" in respect of equity issuance, or underwriter preferences for underwriting issues at particular times of the year. By reporting quarterly mean stock market levels, any variation between intra-year troughs and peaks is understated. In similar vein, our documentation of average frequencies of SEOs for economic upturns and downturns abstracts from the magnitude and/or length of business expansions and contractions. We admit the possibility that in faster expansions economic conditions improve more rapidly, resulting in the potential for greater equity financing.

SUMMARY

Temporal variation in equity issue volume has been characteristic of global stock markets and has resulted in the clustering of SEOs in certain time periods,

suggesting that issuing firms are motivated by common market and macroeconomic factors. In this analysis we have sought to differentiate market-based and macroeconomic drivers of the seasoned equity decision, and have proposed a further information-related motivation for issuing firms. The results of our analysis suggest that equity financing decisions in the UK market over the period 1990–2002 were largely driven by macroeconomic conditions.

Inconsistent with the extant literature in the area, and in particular with US evidence, UK issuers seem relatively less sensitive to fluctuations in the general level of the stock market than to prevailing macroeconomic conditions. It seems that such conditions are more likely to inform firms' issuing decisions vis-à-vis any desire to delay an equity issue decision until such time as (an issuing firm's) shares are relatively overvalued. Prior stock market levels were found to have little explanatory power for the SEO issuance decision. Conversely, all our proxies for aggregate macroeconomic conditions were found to be significant drivers and, moreover, had explanatory power for the magnitude of announcement period share price reaction. We speak specifically to this question of (un)certainty regarding assets-in-place as discussed by Choe et al. (1993) by proposing that a smaller adverse selection effect might be characteristic of firms and/or industries for which there is a significant "investor relations" (IR) or "information environment" effect, that is, where firms have built reputation for credibility in communicating investment plans and in delivering on such projects. This study has found evidence of a significantly positive IR effect for our sample of analyst-followed firms deemed to have built reputation for credibility in disclosure and follow-through. Furthermore, announcement price effects were substantially less adverse for this sub-sample vis-à-vis those firms with poorer IR history. Interestingly, when the Bayless and Chaplinsky (1996) selection criteria employed in the definition of HOT and COLD issue markets are utilised, we find little coincidence with the expansionary and contractionary phases of the UK business cycle respectively. In summary, the results suggest that favourable macroeconomic factors, coupled with a positive IR history, were the main drivers of the seasoned equity issuance decision for our sample of UK firms, the issuance decision for these firms being significantly less likely to be motivated by market timing considerations.

By definition, we assume that incremental financing by our sample is equity in nature rather than deriving from retained earnings or debt issuance. In thus restricting the financing decision, we implicitly relate a firm's investment decision, as distinct from its financing decision, to macroeconomic and stock market conditions. It is recognised that the development of a dynamic model in which listed firms may issue either seasoned equity or debt may provide interesting insights into the motivations for and linkages between investment and incremental financing. In light of the very low interest rate environment that has prevailed in recent years, and firms' ability to issue debt at historically low yields (which arguably lessened the case for equity financing), development of such a model offers potential for important insights into financing behaviour. Finally, we recognise that it might be interesting to follow up any companies that withdraw

SEOs following announcement, in order to see if market conditions or ARs at issue announcement influence this secondary decision. Investigation of such factors suggests further avenues for future study.

NOTES

1 Overvaluation may be defined in several ways. Lucas and MacDonald (1990) define overvaluation as a situation whereby disclosure of firm-specific information will result in a fall in share price, while Graham, Dodd and Cottle (1962) focus on intrinsic value and propose that share price converges to this intrinsic or fundamental value over time. Debondt and Thaler (1987) and Chopra, Lakonishok and Ritter (1992) advocate a market overreaction hypothesis whereby markets tend to favour certain shares for periods in time only to reverse this situation in future years - the "dot-com" bubble is a case in point. This "reversal of fortunes" theory suggests a tendency for stock markets to overreact to firm-specific information disclosures.

2 Korajczyk, Lucas and McDonald (1992) examine the impact of time-varying information asymmetry on the timing of SEOs and provide evidence that timing is relatively more important for firms that encounter greater or more volatile information asymmetry levels.

3 Akerloff (1970) was an early proponent of the relevance of information asymmetry to active markets. Leland and Pyle (1977), Ross (1977) and Myers and Majluf (1984) related this problem to the market for financial securities, providing early evidence in respect of financial signalling models and suggesting that information asymmetry and the potential for mark-down of an issuing firm's shares at announcement of a new issue may prevent firms issuing equity to finance investment. A new issue may be interpreted by the market as a managerial belief that their shares are overvalued, and may result in investors revising downwards their assessment of issuer value at announcement. The empirical evidence on market reaction to SEOs, a useful survey of which is provided by Eckbo and Masulis (1995), is generally supportive of this information asymmetry theory, the extent of the information disparity between issuing firms and investors being directly related to the magnitude of the adverse share price reaction to the issue announcement.

4 SEO data is available from the Stock Exchange Website. In conjunction with the FT News Cards, we estimate that our sample of 1220 SEOs constitutes approximately 72 per cent of the total number of SEOs over the sample period.

5 The AIM commenced trading in June 1995 and is a market designed to meet the listing needs of smaller growth companies that might not meet the full criteria for listing on the main LSE.

6 We recognise that use of ARs may be an imperfect means of capturing asymmetric information and that SEO volume may imperfectly identify favourable and unfavourable conditions for issue - alternative factors such as price pressure may impact on issue volume and time-varying asymmetric information may not be the sole determinant of trends and cycles in corporate financing.

7 Typically, analyst responses with respect to disclosure reliability tended to mid-range values, just five firms being awarded the minimum of three points or one point each per disclosure measure, and 12 firms receiving the maximum 15 points. Interestingly, all of these latter firms were below median market capitalisation, suggesting that (building) reputation is of relatively greater concern for such firms. Those firms receiving the

minimum disclosure rating were large multi-nationals with diversified operations. We could find no discernible industry effect across the range of responses received.

[8] Given the strong positive correlation between our business cycle and stock market variables, we consider the association with both SEO volume and ARs at issue announcement separately rather than taking a position on the relative impact of economic and market variables on issue volume.

[9] While we deal with multicollinearity in our results section, we note the potential for problems due to correlation among these economic indicator variables.

[10] The stock market is often seen as a lead indicator for other economic variables, so we alternatively considered a 2-quarter lag, with, however, no useful insights or improvement in explanatory power. It is difficult to measure reliably the lag between a firm thinking that an SEO might be timely and actually going ahead with that decision. Our sense is that such decisions are taken fairly quickly by the majority of firms where authorisation has been obtained from the shareholder body (see Barnes and Walker (2006) for further discussion of this topic).

[11] A three category variable could plausibly be defined here (i.e. High, Medium or Low) but we are centrally interested in the merits of impressive disclosure credibility (as distinct from shades of mediocrity). In consequence we define our indicator variable [1,0].

[12] There is no strong economic theory that lets us define lags exactly so the association of SEO volume and ARs with unemployment is likely to be an empirical issue. When we substitute UN_t with UN_{t-1} in models 2, 4 and 5 we find that the coefficient estimates are larger in absolute value and now significant at the 5% level in the case of model 2, while leaving other variables and significance levels quantitatively unchanged.

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