



Firm characteristics, market conditions, and the pattern of performance after seasoned equity offers

Mark Bayless , Kelly Price & Margaret Monroe Smoller

To cite this article: Mark Bayless , Kelly Price & Margaret Monroe Smoller (2005) Firm characteristics, market conditions, and the pattern of performance after seasoned equity offers, Applied Financial Economics, 15:9, 611-622, DOI: [10.1080/09603100500056700](https://doi.org/10.1080/09603100500056700)

To link to this article: <https://doi.org/10.1080/09603100500056700>



Published online: 23 Aug 2006.



Submit your article to this journal [↗](#)



Article views: 46



View related articles [↗](#)



Citing articles: 1 View citing articles [↗](#)

Firm characteristics, market conditions, and the pattern of performance after seasoned equity offers

Mark Bayless, Kelly Price and Margaret Monroe Smoller*

Wayne State University, Detroit MI 48202, USA

This paper uses a characteristics-based approach to examine the pattern of abnormal returns after seasoned equity offerings. Unlike previous studies the risk class of issuers are allowed to change in each of a series of six-month holding periods and firms are classified into categories based on performance measures, the use of proceeds and market conditions at the time of issue. This methodology reveals that negative abnormal returns persist for only about 3.5 years on average following offers and are driven by the 37% of firms that reduce capital spending. These and other results suggest that post-issue abnormal returns vary in a way that is consistent with quasi-efficient capital markets.

I. Introduction

There is considerable controversy concerning the post-issue performance of firms making seasoned equity offers (SEOs). Loughran and Ritter (1995, 2000) and Spiess and Affleck-Graves (1995) report that issuing firms underperform carefully selected benchmarks for at least five years following an offer. This evidence leads them to conclude that there is a 'new issues puzzle'.¹ Daniel *et al.* (DHS, 1998), Barberis *et al.* (BSV, 1998) and Hong and Stein (HS, 1999) contend that long run under-performance following equity issues is consistent with models in which equity markets are only quasi-efficient due to the well-known psychological traits of cognitive bias and limited ability to absorb new information. In quasi-efficient markets the signal inherent in a stock offering can reverse a trend of over valuation but investors' imperfections will extend the time it takes

the market to fully recognize the 'true' valuation of the issuing firm's stock. This study departs from the methodology used in previous studies in order to provide evidence that can be used to evaluate the new issues puzzle in the context of the models of DHS, BSV, and HS. Pursuant to this goal the focus here is on a series of short term returns and sample firms are sorted into categories based on firm performance measures the use of issue proceeds, and market conditions at the time of issue. To increase the power of the tests the risk class of the issuing firm is allowed to change each year. The methodology has the advantage that it allows the benchmarks to adapt to category changes in issuing firms over time and it allows evaluation of the predictions of quasi-efficient market models that the time path of returns will be sensitive to post-issue signals of firm quality.

Possible reasons for poor post-issue performance are discussed in Section II. Section III describes the

* Corresponding author. E-mail: m.smoller@wayne.edu

¹ See also Lee (1997) and Kang *et al.* (1997).

data and methodology. Empirical results and conclusions are discussed in Sections IV and V respectively.

II. Explanations for Post-SEO Performance

Theoretical explanations to explain the persistence of long run abnormal returns must be based on reasonable market imperfections. Daniel *et al.* (DHS, 1998), Barberis *et al.* (BSV, 1998) and Hong and Stein (HS, 1999) allow investors to exhibit well known psychological traits that constrain market efficiency and develop models that are consistent with the long persistence of negative returns following an SEO. The DHS model assumes that investors suffer from overconfidence because they overestimate the reliability of private information and underutilize public information. The model predicts that public signals which confirm investors' prior beliefs can trigger continued overreaction, but at some point after prices have deviated from equilibrium, further public information will lead investors to partially correct misvaluations and gradually draw the price back towards equilibrium. In the BSV model, investors assume that a given firm's earnings move between two 'regimes'. In the first regime, which investors view as more likely, earnings are mean reverting. In the second regime, earnings follow trends. Investors are reluctant to alter their views about which regime is generating the firms' earnings. Their model predicts that investors will underreact to the first of a series of positive earnings surprises since they believe earnings will revert to their lower mean level. Eventually, however, they become convinced that earnings are trending and switch to regime two, which causes investors to overvalue the firm's stock. Once in regime two, investors will underreact to the bad news of an SEO announcement since they are convinced that the firm's earnings are trending up. The HS model is a third explanation of post issue abnormal returns. The key intuitions are that investors can only process a subset of available information and that information gradually diffuses to investors. The model has 'newswatchers' who trade based solely on information they privately observe about fundamentals and ignore past price movements, and 'momentum traders' who condition their trades only on trends in past prices. Overreaction in equity markets occurs when, for example, favourable earnings information is gradually acquired by newswatchers. Their trades set off an upward trend in security prices which attracts the attention of momentum traders. Momentum traders who enter the market early profit while newswatchers are still active, but eventually bid the stock price beyond its

equilibrium. As the momentum traders begin to unwind their positions, stock prices initially fall too far and then oscillate toward equilibrium. Two important empirical predictions emerge from the models of quasi-efficient markets described above. First, reasonable market imperfections exist that could prevent investors from rapidly correcting equity misvaluations. Second, firm and market characteristics in the period surrounding an equity issue could send public signals to investors that will alter the speed of adjustment of prices toward equilibrium. For guidance on the effectiveness of various types of public signals models of asymmetric information theory and related empirical work are considered.

Models of asymmetric information by Myers and Majluf (1984), Lucas and McDonald (1990) and Cooney and Kalay (1993) predict that overvaluation will be an important motivation to issue SEOs and that equity issues on average will be viewed as bad news. While these models do not allow for the long run misvaluation of equity they do provide important clues about how investors are likely to react to public signals of firm performance. Negative signals are those that indicate overvaluation as a motive while positive signals are those that indicate management wants issue proceeds to fund positive NPV projects. Types of negative signals include evidence that funds are needed to cover low earnings (Miller and Rock, 1985); that management wants to decrease the degree of leverage to accommodate increased risk of its earnings stream (Heinkel, 1982); or that management has other reasons to believe that the stock is overvalued (Myers and Majluf, 1984). McLaughlin *et al.* (1996) report findings consistent with the Miller and Rock hypothesis; firms that do relatively poorly after the issue are those with higher post-issue free cash flow, while the post-issue winners are the ones that have invested in fixed assets. Cheng (1998) finds two predictors of relatively good post-issue performance: investment of the issue proceeds and a high degree of leverage.

A number of researchers, including Brav *et al.* (2000) and Eckbo *et al.* (2000), argue that long run underperformance of SEOs is due to poorly specified models. Eckbo *et al.* (2000) report that issuer underperformance reflects lower systematic risk exposure for issuing firms relative to matched firms. They conclude that the low returns reported for SEOs are in line with investors' expectations for these firms, and should not be treated as abnormal because the SEO reduces the firm's risk. Loughran and Ritter (1995, 2000) use methodology similar to Brav *et al.* (2000) and continue to find underperformance. Therefore, the effort here is concentrated on empirical methods that address the issue raised by Eckbo *et al.* that an

SEO might alter the risk and therefore the expected return of the firm.

III. Data and Methods

Data and summary statistics

The data for this study are seasoned common equity offers made by industrial firms from 1974 to 1990, obtained from Securities Data Corporation (SDC). The sample contains only those issuing firms that also have data available on both CRSP and COMPUSTAT. The data base involving CRSP and Compustat is constructed as follows. At the end of each June, NYSE firms are sorted into quintiles based on their market size. AMEX and NASDAQ firms are then assigned to portfolios based on the NYSE quintiles. The firms in each of these portfolios are then sorted into quintiles based on their book-to-market ratios, resulting in 25 portfolios. Each of these portfolios is then sorted into quintiles based on its firms' prior 12-month returns (momentum). This procedure results in 125 benchmark portfolios.

The resulting dataset contains 1073 issuing firms, with a total of 1752 issues among them over the

sample period. Of the issuing firms, 51.6% issued more than once during the sample window. Summary statistics for the sample are contained in Table 1. Columns 3 and 8 provide the average firm size, in millions of dollars, for single- and multiple-issuing firms respectively. The next two columns show the average size of the equity issue and the average percentage of firm size represented by the issue. The percentage of the firm's equity represented by the new stock issue ranges from a low of 4.0% for the multiple issuers in 1985, to a high of 17.2% for the single issuers in 1990.

The period from five years before the announcement date until five years after the issue is used to measure excess returns for offering firms. Each year is divided in half, yielding 20 periods of six months each; ten before the announcement and ten following the actual issue. The tenth period ends in the calendar month immediately prior to the announcement. The 11 period begins in the calendar month immediately following the offer. In each period of the sample, any firms with more than 10% missing observations are omitted. For each stock, excess returns are measured as the difference of the stock's return minus that of the portfolio matched to it for size, book to market,

Table 1. Issue frequency, average firms size, average issue size and for single and multiple issuers by cohort year, 1974–1990

This table presents statistics on the number of issues, the average firm size of issuers, and the average issue size for 587 issues by single issuers and 1164 issues made by multiple issuers during the period 1974–1990. The sample is restricted to issues made by industrial firms that are covered by both COMPUSTAT and CRSP. Data on the date of issue is obtained from Securities Data Corporation (SDC). *Firm size* is measured as total assets (COMPUTSTAT item no. 6) in the year prior to issue, *Issue size* is the number of shares offered time the offer price, and *Issue size as a per cent of firm size* is $(\text{Issue size} / \text{Firm size}) \times 100$.

Single issuers					Multiple issuers				
Year of issue	Number of issues <i>N</i>	Firm size	Issue size	Issue size as a per cent of firm size	Year of issue	Number of issues <i>N</i>	Firm size	Issue size	Issue size as a per cent of firm size
1974	6	90.1	13.3	14.8	1974	5	272.1	34.7	12.7
1975	12	293.0	20.8	7.1	1975	13	345.8	32.7	9.5
1976	27	256.1	21.8	8.5	1976	37	414.4	28.5	6.9
1977	10	83.3	13.1	15.7	1977	13	317.6	18.9	6.0
1978	18	173.9	18.2	10.5	1978	40	188.6	14.8	7.8
1979	16	64.7	8.9	13.8	1979	35	108.1	15.9	14.7
1980	57	129.7	14.0	10.8	1980	109	266.4	34.3	12.9
1981	41	206.2	18.4	8.9	1981	93	329.2	26.8	8.2
1982	37	471.1	21.4	4.5	1982	87	316.8	25.8	8.1
1983	123	179.7	17.4	9.7	1983	197	315.2	35.2	11.2
1984	16	98.6	9.8	9.9	1984	36	300.3	24.8	8.3
1985	17	421.0	24.9	5.9	1985	86	1179.1	46.6	4.0
1986	49	574.8	34.7	6.0	1986	125	498.1	40.4	8.1
1987	42	350.9	30.4	8.7	1987	114	595.9	51.1	8.6
1988	24	160.8	25.4	15.8	1988	43	828.9	58.7	7.1
1989	47	287.9	26.3	9.1	1989	66	226.2	33.3	14.7
1990	45	162.1	27.9	17.2	1990	65	742.7	54.2	7.3

and momentum, re-assigning the stock to a matched portfolio each June, to allow for changes in the firm's risk characteristics.²

Changes in firm performance measures after the SEO

Two categories of data on firms' accounting performance are examined following offers as possible signals of firm value. First are performance measures that yield an indication of the firm's potential for growth following the issue. Second are variables that focus on the use of issue proceeds by the issuing firm. All variables are measured as the level one year following the issue minus the level the year of issue scaled by the level the year of issue. Compustat data items are in parentheses.

Firm performance measures:

1. Sales (no. 12)
2. Assets (no. 6)
3. Operating income (no. 13).

Use of issue proceeds:

1. Capital expenditures (no. 30)
2. Cash/total assets (no. 1/no. 6)
3. Free cash flow = operating income minus interest minus taxes minus capital expenditures minus preferred dividends minus common dividends (no. 13 – no. 15 – no. 14 – no. 30 – no. 19 – no. 21)
4. Debt (no. 9 + no. 13).

Myers and Majluf (1984) emphasize the use of proceeds as an important signal of potential overvaluation and posit that if firms invest heavily in capital projects after the issue, then investors will be less likely to react negatively. Cash balances and free cash flow are also indicators of whether the firm issued to fund attractive investment projects or to build financial slack (Myers and Majluf, 1984). Increased cash or free cash flow will be considered a negative signal indicating, for example, that managers have no immediate use for issue proceeds (see McLaughlin *et al.*, 1996). Cheng (1997) reports a positive association between leverage and post-issue performance as predicted by Heinkel (1982). Therefore changes in leverage following the issue are examined. An increase in debt could send a positive signal if it indicated the firm issued in order to

relieve a leverage constraint rather than to exploit over valuation (Cheng, 1998). Similarly, a decrease in debt could indicate that the firm needed to reduce leverage in response to an increase in expected risk of earnings (Heinkel, 1982).

IV. Empirical Results

Excess returns before and after the SEO period

In Table 2, excess returns for the issuing firms are reported by half-year period, from five years prior to the announcement until five years after the issue. Time period –1 is the half-year immediately prior to the announcement, and time period 1 is the half-year immediately following the issue. The second column contains the excess returns for the entire sample of issuing stocks. With the exception of period –9, excess returns are significantly positive for the five-year span before the announcement date. Returns are significantly negative from period 2 through period 5 and for period 7.

Since the sample contains firms that issue more than once during the sample period, it is examined whether post-issue negative returns are influenced by the market reaction to subsequent issues. The sample is partitioned into single and multiple issuers and report their excess returns in the third and fourth columns of Table 2.³ Both groups show positive preannouncement returns and negative post-issue returns that are similar to the full sample. With the exception of period 4 single issuers experience significantly negative abnormal returns from period 2 through period 7. The negative post-issue returns of the multiple issues are less pronounced and less consistent but slightly longer lived. There are five significantly negative half-year returns for multiple issuers, but they are spread over eight half-year periods following the issue. The three and a half years of post-issue negative returns for the full sample differs from the results of Loughran and Ritter (1995) and Spiess and Affleck-Graves (1995), who find negative returns for at least five years after the issue. The difference could be due to the present analysis of shorter time periods, with stocks being re-assigned to matched portfolios in order to allow for parameter shifts in issuers and benchmarks.

² A complete description of the portfolios can be found in Daniel *et al.* (1997), p. 1057.

³ The possibility is recognized that some of the firms classified as single issuers might have issued stock sometime in the years preceding the sample. That limitation notwithstanding, differences in results for the single and multiple issuers is noted.

Table 2. Excess returns for ten six-month periods surrounding seasoned equity issues

This table presents excess returns for 1752 seasoned equity issues made during the period 1974–1990 by industrial firms that have data available on CRSP and COMPUSTAT. Excess returns are calculated by subtracting monthly returns to portfolios matched by size, book-to-market, and momentum from individual firm returns. Time periods are measured in half-year increments relative to announcement or offer. Therefore, time period -10 is the six-month period ending four and one-half years prior to the announcement, while time period $+10$ is the six-month period ending five years after the offer. The time period between time -1 and 1 is the interval between the announcement and the offer. This interval ranges from 0 to 270 days in the sample. *Single issuers* include all firms that had only one seasoned equity offer during the sample period. *Multiple issuers* had two or more issues within the sample period.

Six month interval preceding announcement or following issue	All issuers	Single issuers	Multiple issuers
-10	2.475*	0.865	3.228*
-9	1.699*	-0.965	3.323*
-8	432	-1.164	2.974*
-7	3.357*	3.089*	3.578*
-6	4.923*	3.380*	5.768*
-5	4.508*	3.413*	5.119*
-4	3.837*	5.390*	3.049*
-3	7.196*	8.220*	6.649*
-2	13.176*	13.491*	13.088*
-1	24.407*	25.115*	24.066*
1	0.720	-1.267	1.766*
2	-1.706^*	-3.691^*	-0.649
3	-1.708^*	-4.490^*	-0.263
4	-1.071^*	-0.393	-1.396^*
5	-1.657^*	-2.429^*	-1.450^*
6	-1.119	-3.039^*	-0.277
7	-2.195^*	-4.206^*	-1.492^*
8	-0.383	1.906	-1.546^*
9	-0.681	-1.001	-0.506
10	-0.345	-1.595	0.171
<i>N</i>	1752	588	1164

Note:

*Significant at 10% level or less.

Market conditions and the pattern of abnormal returns

Bayless and Chaplinsky (1996) report that announcement reactions to equity issues are lower during periods of high issue volume. They interpret this finding to be consistent with the existence of intertemporal variations in the magnitude and severity of asymmetric information: high volume is associated with less information asymmetry. In Table 3 evidence on the pattern of abnormal returns is presented after separating the sample into issues that are made in 'hot', 'cold', and 'normal' periods. The period definitions from Bayless and Chaplinsky (1996) are used where hot issue periods are defined as contiguous months in which the three-month moving average of scaled equity issue volume is in the upper quartile of all months in the sample. Cold periods are defined as contiguous months in which the three-month moving average of scaled equity issue volume is in the

lower quartile of all months. Normal months are all periods that are neither hot nor cold. For the sake of brevity, results beginning a year and a half before the announcement are reported instead of the full five years.

The results in Table 3 reveal a pattern of abnormal returns that is considerably different from the full sample results presented in Table 2. Abnormal returns are significantly negative for hot period issuers only in periods 4, 5, and 7 and for normal period issuers in periods 3, 7, and 8. Thus while hot and normal period issuers experience negative abnormal returns relatively late in the five-year post-issue window, the pattern of returns is sporadic compared to the full sample and to the results reported by Loughran and Ritter (1995). Cold period issuers experience strong, significant negative abnormal returns but only in periods 2 and 3. Importantly, cold and normal period issuers both experience

Table 3. Excess returns for ten six month-periods surrounding seasoned equity offers made in hot, cold, and normal equity issue markets

This table presents excess returns for 1752 seasoned equity issues made by industrial firms during hot, cold, and normal periods during 1974–1990. Excess returns are calculated by subtracting monthly returns to portfolios matched by size, book-to-market, and momentum from individual firm returns. Time periods are measured in half-year increments relative to announcement or offer. Therefore, time period –10 is the six-month period ending four and one-half years prior to the announcement, while time period +10 is the six-month period ending five years after the offer. The time period between time –1 and 1 is the interval between the announcement and the offer. This interval ranges from 0 to 270 days in the sample. *Hot periods* are defined as contiguous months in which the three month moving average of scaled equity issue volume is in the upper quartile of all months from 1968–1990. *Cold periods* are defined as contiguous months in which the three month moving average of scaled equity issue volume is in the lower quartile of all months from 1968–1990. *Normal periods* are all periods that are neither hot nor cold. Scaled issue volume is aggregate equity issue volume (US\$ billions) multiplied by 10^5 and divided by the month-end value of outstanding equity for NYSE/AMEX and Nasdaq firms (see Bayless and Chaplinsky, 1996).

Six month interval preceding announcement or following issue	Issues that occurred during hot periods	Issues that occurred during cold periods	Issues that occurred during normal periods
–3	6.515*	9.506*	7.396*
–2	11.974*	17.215*	13.406*
–1	24.933*	24.387*	23.218*
1	–1.114	3.923*	2.892*
2	–0.301	–6.377*	–1.910
3	–1.042	–4.197*	–2.505*
4	–1.681*	2.358	–1.856
5	–2.240*	–1.620	–0.281
6	–0.735	–3.256	–0.662
7	–3.163*	1.566	–2.355*
8	0.376	2.287	–3.830*
9	–0.478	–0.829	–1.049
10	0.329	–0.769	–1.611
N	1051	268	433

Note:

*Significant at the 10% level or less.

significantly positive returns in the half-year following issue (period 1).

The pattern of returns presented in Table 3 suggests that in hot periods investors believe the reaction to the issue at the time of announcement and offer leaves the firm fairly valued. Abnormal returns are insignificantly different from zero in the first three half-year periods following the offer. This pattern of returns is consistent with the models of DHS (1998) and BSV (1998). During periods of low asymmetric information knowledge of an offer would not be far out of line with investors private information so the reaction would be relatively mild and quick. More specifically, lower levels of asymmetric information would reduce the likelihood that investors would view an event as ‘selective’ (DHS, 1998) or cause investors to revise assumptions about the earnings regime of the firm (BSV, 1998). This is consistent with the insignificantly negative returns in period 1 through 3 for hot period issuers and the weak initial

response to issues in normal periods. The eventual negative abnormal returns for hot period issuers in period 4, 5, and 7 and for normal period issuers in periods 7 and 8 are consistent with reports by Loughran and Ritter (1997) that on average the operating performance of issuers is inferior following issue. This negative performance would constitute bad news, which investors may be reacting to in later periods.

The cold period pattern of returns oscillates as predicted by HS (1999). Investors react strongly to the issue announcement (see Bayless and Chaplinsky, 1996) and then treat issuing firms as under valued in the first period following the offer. The half-year abnormal return in period one is 3.923 basis points and significant at better than the 10% level. Cold period abnormal returns continue to oscillate until period 8, although high variance of returns causes estimated coefficients to be insignificant after the negative returns experienced in period 2 and 3.

Table 4. Changes in firm characteristics from one year before seasoned equity issue until one year after the offer

This table depicts the financial characteristics for 1752 seasoned equity issues made by industrial firms during 1974–1990. Variable definitions are as follows, with COMPUSTAT numbers in parentheses: *sales* (no. 12); *assets* (no. 6); *the ratio of cash to total assets* (no.1/no.6); *operating income* (no. 13); *capital expenditures* (no. 30); *debt* (no. 9 + no. 34); and *free cash flow*, which is operating income minus interest minus taxes minus capital expenditures minus preferred dividends minus common dividends (no. 13 – no. 15 – no. 14 – no. 30 – no. 19 – no. 21). Prior-to-offer growth variables are calculated as $(X_0 - X_{-2})/X_0$ where X_0 is the variable's value in the year of the offer and X_{-2} is the value two years prior to issue. Subsequent growth variables are calculated as $(X_{+2} - X_0)/X_0$ where X_{+2} is the variable's value two years following the year of the issue.

	Prior to announcement	Subsequent to offer	Difference:
Sales growth	51.60	24.34	–27.26 ***
Asset growth	68.12	24.73	–43.38 ***
Growth in cash to total assets	19.10	1.27	–16.82 ***
Growth in operating income	9.05	2.04	–7.01 ***
Growth in capital expenditures	8.12	2.25	–5.87 ***
Growth in debt	–2.76	10.47	+13.23 **
Growth in free cash flow	–3.77	–3.09	+1.45 *

Notes:

*** Significant at the 1% level of confidence.

** Significant at the 5% level of confidence.

* Significant at the 10% level of confidence.

Cold period results are also consistent with the models of DHS (1998) and BSV (1998) which predict that investors will have difficulty adjusting to information that differs substantially from their priors. This is more likely to be the case in cold periods when managers' private information may differ substantially from that available to investors. Not surprisingly, normal period results exhibit traits of both hot and cold period issues. Early oscillations from the negative announcement and offer reactions (see Bayless and Chaplinsky, 1996) to positive during period one resemble cold periods. Then, similar to hot period results, abnormal returns for normal period issuers become consistently negative beginning in period 2 but are significantly so only in periods 3, 7, and 8.

Changes in firm performance measures

Models of asymmetric information and models of quasi-efficient markets suggest that investors' adjustment to issues may be conditioned on firm performance measures that provide information about the motivation for the issue and the firm's use of the proceeds. Therefore, firm performance characteristics

are examined before and after SEO's. Table 4 reports changes in firm performance measures from the year prior to the announcement to the year following the seasoned equity issue. The measures indicate that the average financial condition of issuing firms declines after a seasoned equity issue. There are statistically significant decreases in sales growth, asset growth, cash to total assets, operating income growth, and capital expenditure growth. The only measures that increase significantly after the issue are debt and free cash flow growth. While free cash flow growth is still negative, it exhibits a slower decline after issue. Given that the firm's performance measures decline on average after SEO's, it is plausible that it is not the actual issue but rather the post-issue financial troubles of the firm that herald the beginning of poor returns.

Excess returns to issuing firms and changes in firm characteristics

Table 5 displays abnormal returns after the sample is partitioned by changes in capital spending, free cash flow and debt following the offer.⁴ A primary positive motivation to issue is to generate the funds required to exploit positive NPV investment projects (Myers

⁴ Results for the other firm performance measures presented in Table 5 yield a similar impression and are omitted to save space.

Table 5. Excess returns for firms classified by firm performance characteristics

This table presents excess returns for seasoned equity issues made by industrial firms from 1974 to 1990. Excess returns are calculated by subtracting monthly returns to portfolios matched by size, book-to-market, and momentum from individual firm returns. Time periods are measured in half-year increments relative to announcement or offer. The time period between time -1 and 1 is the interval between the announcement and the offer. This interval ranges from 0 to 270 days in the sample. Variable definitions are as follows with COMPUSTAT numbers in parentheses: *capital expenditures* (no. 30); *debt* (no. 9 + no. 34); and *free cash flow*, which is operating income minus interest minus taxes minus capital expenditures minus preferred dividends minus common dividends (no. 13 – no. 15 – no. 14 – no. 30 – no. 19 – no. 21). Variables are classified as increasing (decreasing) if the value two years following the offer is greater (less) than the value the year of the offer.

(1) Six month interval preceding announcement or following issue	(2) Increased capital expenditures	(3) Decreased capital expenditures	(4) Increased free cash flow	(5) Decreased free cash flow	(6) Increased debt	(7) Decreased debt
-3	7.876*	6.990*	8.066*	7.030*	7.693*	6.256*
-2	13.647*	12.463*	11.98*	14.283*	13.412*	10.860*
-1	23.905*	24.147*	23.49*	25.657*	25.843*	19.111*
1	5.106*	-7.140*	-3.665*	5.161*	1.342	-1.739
2	2.626*	-10.667*	-5.455*	1.812*	-0.826	-6.056*
3	1.029	-7.511*	-3.498*	-1.296	-1.955*	-3.161*
4	0.896	-3.973*	-0.746	-2.456*	-2.050*	0.648
5	-1.554	-2.303*	-0.304	-3.393*	-2.901*	-0.080
6	-2.403*	0.355	2.569*	-5.481*	-3.616*	5.070*
7	-2.107*	-1.055	-0.619	-2.674*	-3.032*	-0.720
8	-1.579	1.528	1.073	-0.926	-2.052*	2.715*
9	0.067	-0.236	2.638	-1.026	0.650	-2.539*
10	-0.237	0.982	-0.86	1.221	-0.049	-0.066
N	1006	581	725	765	1164	488

Note:

*Significant the 10% level or less.

and Majluf, 1984; Lucas and McDonald, 1990 and Cooney and Kalay, 1993). Therefore, an increase in capital expenditures following the offer should send a positive signal to investors. The results in column (2) indicate that over 63% (1006) of sample firms increased capital expenditures following the offer. These firms experience significantly *positive* abnormal returns in periods 1 and 2 and non-negative abnormal returns for two and one-half-years following the issue. Not until periods 6 and 7 are returns negative for firms that increase capital spending. The remaining 581 firms that decreased capital spending experience large and significantly negative abnormal returns immediately following the offer and continue to experience negative returns for two and one-half-years (through period 5). It is believed that these results can be interpreted in the context of quasi-efficient market models. When firms increase capital spending, investors have little incentive to interpret the issues as a 'selective' event designed to exploit over valuation (DSH, 1998) or to update their model of firm performance (BSV, 1998). This is consistent with the continuation of the pre-announcement pattern of positive abnormal returns

following the offer when firms increase capital spending. However, a decrease in capital spending despite the increase in funds from the issue sends a more clearly negative signal. This should increase the likelihood that investors will suspect the event has been selected by management to exploit over-valuation (DHS, 1998) or revise the regime they believe is driving the firm's earnings away from an assumption that it is upward trending (BSV, 1998). In either case negative abnormal returns like those observed for decreases in capital expenditures would result.

Investor's interpretation of movements in free cash flow are less easy to predict because increase in free cash flow can result from either increase in income or decrease in expenditures. It is interpreted that an increase in free cash flow is likely to be taken as a negative signal because it invites questions about the firm's need for funds. If firms issue when the need for funds is not urgent, then investor's are more likely to fear that the issue decision is valuation related (Myers and Majluf, 1984). This would increase the likelihood that the event would be viewed as selective (DHS, 1998). Consistent with this view, the results

in column (4) reveal that the roughly 50% of firms (725) that report increased free cash flow following issues experience an abrupt reversal of the pre-announcement pattern of positive abnormal returns. For these firms abnormal returns are negative in period 1 through 3. Column (5) shows that a little over half of the firms (765) decrease free cash flow following an issue, consistent with the case when funds are funnelled into new projects. These firms continue the pre-announcement pattern of positive abnormal returns for a full year following the issue (through period 2) and experience non-negative returns until period 4.

Models of leverage signalling by Heinkel (1982) and Cheng (1998) and empirical results reported by Bayless and Chaplinsky (1991) suggest that an increase in debt following an equity issue may be viewed as a positive signal.⁵ Results in the last two columns in Table 5 indicate that over 70% of firms (1164) report increased debt and about 30% (488) experience a decrease in debt following an equity issue. Unlike the case for increased capital spending and decreased cash flow, firms that increase debt do not experience positive abnormal returns following the issue. However, abnormal returns to these firms appear to be less negative in periods 1 through 3 than for their counterparts who decrease debt following offers. Beginnings in period 3 returns are more consistently negative for debt increasing firms. In column (7) firms that decrease debt experience post-issue returns oscillate from negative in period 2 and 3 to positive in periods 6 and 8 and back to negative again in period 9. An oscillating pattern of post-issue abnormal returns is consistent with the model of HS (1999) in which investors overreact to an initial signal of firm quality and then overcompensate in subsequent time periods.

The results in Table 5 suggest that investors key most heavily on capital expenditures in evaluating issuing firms. However, investors likely evaluate multiple dimensions of firm quality so it is believed to be important to examine the *combination* of changes in capital expenditures plus changes in either debt or free cash flow. In Table 6 evidence on investors' response to changes in both capital expenditures and free cash flow is presented. The results in column (2) and (3) indicate that when capital expenditures decrease, abnormal returns abruptly shift from positive in the pre-announcement period (−3 to −1) to negative in the post-issue period. Importantly,

returns when capital expenditures decrease are more negative in periods 1 and 2 when free cash flow concomitantly increases. The results in column (2) for a decrease in capital expenditures and an increase in free cash flow reveal that negative abnormal returns peak at −11.118% in period 2 and continue to be negative and significant through period 4. In column (3), when both capital spending and free cash flow decrease, returns peak at a lower level of −8.568% in period 3 and continue to be negative and significant through period 5.

The results in column (4) when capital expenditures increase and free cash flow decreases reveal that abnormal returns are significantly positive in periods 1 and 2 and non-negative until period 5. Abnormal returns then are significantly negative in periods 5 through 8. In comparison in column (5) when free cash flow increases returns are non-positive until period 6 but never become significantly negative. This suggests that an increase in capital spending combined with a decrease in free cash flow sends an early positive signal to investors which is later reversed, perhaps when firm's performance fails to meet expectations (Loughran and Ritter, 1997). Investors appear more cautious initially when increases in capital spending are accompanied by increases in free cash flow, but never come to view these offers a selective events (DHS, 1998) or feel compelled to revise the assumed earning regime of the firms (BSV, 1998).

Table 7 presents the results of partitioning the sample changes in capital expenditures and debt following the offer. These results suggest that changes in capital spending dominate but that changes in debt have a discernable secondary effect on returns. The most immediate positive response from inventors comes in column (5) when both capital expenditures and debt increase. In this case abnormal returns are significantly positive in both periods 1 and 2. However, investor's optimism has collapsed by period 5 when abnormal returns become significantly negative for four periods (5 through 8). The most negative initial response comes in column (3) when both capital spending and debt decrease. In this case returns are significantly negative early on but become positive in period 6. The results in columns (3) and (5) are consistent with the models of DHS (1998) and BSV (1998) in which investor's initially overreact to signals of firm quality and then attempt to correct the resulting misvaluations. In column (2) decreases in

⁵ Bayless and Chaplinsky (1991) report that debt issues that occur when investors expect equity result in a significantly positive market reaction.

Table 6. Excess returns for firms classified by joint changes in capital expenditures and free cash flow

This table presents excess returns for 1752 seasoned equity issues made by industrial firms from 1974 to 1990. Excess returns are calculated by subtracting monthly returns to portfolios matched by size, book-to-market, and momentum from individual firm returns. Time periods are measured in half-year increments relative to announcement or offer. The time period between time -1 and 1 is the interval between the announcement and the offer. This interval ranges from 0 to 270 days in the sample. Variable definitions are as follows with COMPUSTAT numbers in parentheses: *capital expenditures* (no. 30); *debt* (no. 9 + no. 34); and *free cash flow* is operating income minus interest minus taxes minus capital expenditures minus preferred dividends minus common dividends (no. 13 – no. 15 – no. 14 – no. 30 – no. 19 – no. 21). Variables are classified as increasing (decreasing) if the value two years following the offer is greater (less) than the value the year of the offer.

(1) Six month interval preceding announcement or following issue	(2) Decreased capital expenditures and increased free cash flow	(3) Decreased capital expenditures and decreased free cash flow	(4) Increased capital expenditures and decreased free cash flow	(5) Increased capital expenditures and increased free cash flow
–3	8.031*	4.966*	7.733*	8.826*
–2	13.552*	10.537*	14.850*	10.392*
–1	24.350*	24.618*	25.442*	23.261*
1	–7.938*	–3.702*	6.956*	1.390
2	–11.118*	–6.716*	3.257*	1.850
3	–7.190*	–8.568*	0.144	1.978
4	–2.527*	–8.163*	–1.114	1.794
5	–1.931	–3.889*	–3.602*	2.090
6	2.124	–3.180	–5.435*	2.592*
7	–0.333	–0.550	–3.005*	–0.270
8	1.651	3.125	–1.976*	–0.577
9	0.743	–2.137	–0.690	2.274
10	–0.208	4.906	0.244	–1.856
N	375	152	576	331

Note:

*Significant at the 10% level or less.

capital spending and increases in debt are associated with abnormal returns that are significantly negative until period 6 and never significantly positive. In contrast, in column (4), increases in capital spending and decreases in debt are associated with returns that are significantly positive in periods 1 and 4 and never significantly negative.

V. Summary and Conclusions

This paper provides evidence that the pattern of returns following seasoned equity offerings is consistent with quasi-efficient capital markets. By allowing the risk class of the firm to change every six-months it is shown that negative abnormal returns on average persist for no more than 3.5 years following an issue. The methodology also reveals that the pattern of returns is sensitive to market conditions and firm characteristics. The negative post-issue returns documented are driven by approximately 37% of issuers that reduced capital expenditures following the offer. Firms that increase capital

expenditures experience *no* abnormal returns if they also experience increased free cash flow or a reduction in debt following the offer.

Recent work has come a long way towards solving the new issues puzzle. Although many possibilities emerge, the following explanation is found to be attractive. Equity issues put investors on alert but, as predicted by Myers and Majluf (1984) and Lucas and McDonald (1990), investors appear to treat firms as fairly valued after the offer unless they receive additional signals of firm quality. When these signals come in forms such as reductions in capital spending or increased free cash flow, investors respond, but with the kind of inefficiencies described in the models of Daniel *et al.* (1998), Barberis *et al.* (1998) and Hong and Stein (1999). The findings that these post-issue adjustments in investors' evaluation of the firm can take three or four years seem reasonable in quasi-efficient markets. Therefore, once the assumption of perfect efficiency in equity capital markets is relaxed, there seems to be little about the post-issue performance of firms that is puzzling.

Table 7. Excess returns for firms analysed by joint changes in debt and change in capital expenditures

This table presents excess returns for 1752 seasoned equity issues made by industrial firms from 1974 to 1990. Excess returns are calculated by subtracting monthly returns to portfolios matched by size, book-to-market, and momentum from individual firm returns. Time periods are measured in half-year increments relative to announcement or offer. The time period between time -1 and 1 is the interval between the announcement and the offer. This interval ranges from 0 to 270 days in the sample. Variable definitions are as follows with COMPUSTAT numbers in parentheses: *capital expenditures* (no. 30); and *debt* (no. 9 + no. 34). Variables are classified as increasing (decreasing) if the value two years following the offer is greater (less) than the value the year of the offer.

(1) Six month interval preceding announcement or following issue	(2) Decreased capital expenditures and increased debt	(3) Decreased capital expenditures and debt	(4) Increased capital expenditures and decreased debt	(5) Increased capital expenditures and debt
-3	7.305*	6.582*	6.158*	7.883*
-2	13.504*	9.290*	12.929*	13.239*
-1	27.484*	18.906*	20.559*	23.89*
1	-5.690*	-8.442*	5.990*	4.257*
2	-9.173*	-13.791*	2.583	2.616*
3	-8.660*	-6.125*	1.044	1.097
4	-5.801*	-2.199	3.115*	-0.395
5	-1.743	-3.169*	2.654	-3.082*
6	-2.702*	5.169*	1.975	-3.955*
7	-1.626	-0.754	-1.069	-2.441*
8	0.559	0.964	2.340	-2.926*
9	0.657	-2.334	-2.353	0.347
10	1.612	0.889	-1.051	0.228
N	333	291	234	714

Note:

*significant at the 10% level or less.

Acknowledgements

The authors are at Wayne State University, Department of Finance, Detroit, MI, 48202. (313) 577-4520. We thank James Cotter and participants at seminars at the SEC, the Financial Management Association and the Southern Finance Association meetings for helpful comments, and Sharad Singhal, Rajesh Talwar, and Dileep Sherwal for research assistance. We especially thank Kent Daniels for the generous use of his portfolio returns data. Any mistakes, of course, are ours alone.

References

- Barberis, N., Shleifer, A. and Vishny, R. (1998) A model of investor sentiment, *Journal of Financial Economics*, **49**, 307–43.
- Bayless, M. and Chaplinsky, S. (1991) Expectations of security type and the costs of adverse selection, *The Journal of Financial Intermediation*, **1**, 195–214.
- Bayless, M. and Chaplinsky, S. (1996) Is there a window of opportunity for seasoned equity issuance?, *Journal of Finance*, **51**, 253–78.
- Brav, A., Geczy, C. and Gompers, P. (2000) Is the abnormal return following equity issuances anomalous?, *Journal of Financial Economics*, **56**, 209–49.

- Cheng, L.-L. (1998) Equity issue under-performance and the timing of security issues, Working Paper, National Economic Research Associates.
- Cooney, J. and Kalay, A. (1993) Positive information from equity issue announcements, *Journal of Financial Economics*, **33**, 149–73.
- Daniel, K., Grinblatt, M., Titman, S. and Wermers, R. (1997) Measuring mutual fund performance with characteristic-based benchmarks, *Journal of Finance*, **52**, 1035–58.
- Daniel, K., Hirshleifer, D. and Subrahmanyam, A. (1998) Investor psychology and security market under- and over-reactions, *Journal of Finance*, **55**, 1839–85.
- Eckbo, E., Masulis, R. and Norli, O. (2000) Seasoned public offerings: resolution of the 'New issues puzzle', *Journal of Financial Economics*, **56**, 251–91.
- Heinkel, R. (1982) A theory of capital structure relevance under imperfect information, *Journal of Finance*, **37**, 1141–50.
- Hong, H. and Stein, J. (1999) A unified theory of underreaction, momentum trading and over-reaction in asset markets, *Journal of Finance*, **54**, 2143–84.
- Kang, J. K., Kim, Y. C. and Stulz, R. M. (1999) The underreaction hypothesis and the new issue puzzle: evidence from Japan, *Review of Financial Studies*, **12**, 519–34.
- Lee, I. (1997) Do firms knowingly sell overvalued equity?, *Journal of Finance*, **52**, 1439–66.

- Loughran, T. and Ritter, J. (1995) The new issues puzzle, *Journal of Finance*, **50**, 23–51.
- Loughran, T. and Ritter, J. (1997) The operating performance of firms conducting seasoned equity offerings, *Journal of Finance*, **52**, 1823–50.
- Loughran, T. and Ritter, J. (2000) Uniformly least powerful tests of market efficiency, *Journal of Financial Economics*, **55**, 361–89.
- Lucas, D. and McDonald, R. (1990) Equity issues and stock price dynamics, *Journal of Finance*, **45**, 1019–43.
- McLaughlin, R., Saffiedine, A. and Vasudevan, G. (1996) The operating performance of seasoned equity issuers': free cash flow and post issue performance, *Financial Management*, **25**, 41–53.
- Miller, M. and Rock, K. (1985) Dividend policy under asymmetric information, *Journal of Finance*, **40**, 1031–51.
- Myers, S. C. and Majluf, N. S. (1984) Corporate financing and investment decisions when firms have information the investors do not have, *Journal of Financial Economics*, **13**, 187–221.
- Spiess, D. K. and Affleck-Graves, J. (1995) Underperformance in long-run stock returns following seasoned equity offerings, *Journal of Financial Economics*, **28**, 243–67.