

What Does the Market Learn from Stock Offering Revisions?

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We examine the disclosure of size revisions of seasoned stock offerings to see what information revisions impart to investors. Revisions could deliver firm-originated information, which discloses something managers know about the firm. Alternatively, they could disseminate market-originated information, which is information market participants have but which is not conveyed until trading takes place. Our results reject the notion that revisions reveal firm-originated news. Instead, the results are consistent with the market-originated news hypothesis and suggest a mechanism that investors and underwriters use to learn about the demand for an offering.

■ Financing decisions are usually thought to reveal information about a firm's future cash flows that market participants do not have. The most widely cited papers to draw this inference are Miller and Rock (1985) and Myers and Majluf (1984). These theories, in which the firm is the source of new information, have been the object of extensive empirical analysis.

Among other things, researchers have examined the impact on capital markets of the disclosure of straight bond, convertible bond, common stock, and preferred stock issues. They have investigated the stock price performance preceding and following financing disclosures. They have analyzed pre- and post-issue earnings performance. They have examined whether the market's reaction to seasoned stock offerings depends on issue purpose or issue expenses. And they have studied the stock price changes when stock issues are taken to market.¹

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¹Stock price reactions to common stock offerings are reported in, among others, Asquith and Mullins (1986), Masulis and Korwar (1986), Mikkelson and Partch (1986), Barclay and

Despite all this effort, no consensus has been reached to determine whether financing decisions divulge information firms have about their future cash flows. For instance, Hansen and Crutchley (1990) find that industrial firms raise funds to supplement significant and prolonged earnings declines. There is no relation, however, between the stock price reaction to the financing announcement and the size of the subsequent earnings downturn. In a similarly puzzling result, Patel, Emery, and Lee (1993) find that even though operating performance declines following an equity issue, the issuing firms do better than industry averages.

Alternatively, some researchers conjecture that the reaction of stock prices to financing decisions reflects a less than perfectly elastic demand for the firm's securities. The reason could be heterogeneous investor beliefs or finite investor clienteles (see, for example, Merton, 1987). In such a world, investors look to the market for clues about the aggregate demand for a firm's stock. The reaction to the marketing and

Litzenberger (1988), Hansen (1988), Korajczyk, Lucas, and McDonald (1990), and Loderer, Sheehan, and Kadlec (1991). Linn and Pinegar (1988) report on preferred issues. Dann and Mikkelson (1984), Eckbo (1986), and Akhigbe, Easterwood, and Pettit (1997) document price reactions to the announcement of bond sales. Smith (1977) and Marsh (1982) examine stock returns before and after financing disclosures. Hansen and Crutchley (1990), Patel, Emery, and Lee (1993), and McLaughlin, Safieddine, and Vasudevan (1996) investigate operating performance. Hull and Kerchner (1996) document the effect of issue costs on stock prices.

the issuing of the stock provides an opportunity to glean such clues. Also, stock offerings are frequently revised, which can provide valuable information about investor valuation.

This paper explores the phenomenon of information release when firms revise the number of shares issued in a seasoned stock offering. Issue-size revisions provide investors with useful feedback about the reservation prices of fellow investors and the size of the firm's investor base. We contrast this idea with the standard notion that the revising firms disclose information directly. With reference to the origin of the information, we speak of the former hypothesis as the "market-originated information hypothesis" and of the latter as the "firm-originated information hypothesis."

Our results show that offering-size revisions convey information: investors do react to these announcements, but the information conveyed does not appear to come from the firm. Instead, our results support the claim that the market itself is the source of new information. Revisions are events that investors use to learn about the demand for an offering.²

The paper is structured as follows. Section I discusses the hypotheses and their testable propositions in more detail. Section II presents the sample of stock offerings considered and related descriptive statistics. Section III documents the market reaction to the revisions. Sections IV and V analyze the competing hypotheses. Section VI provides conclusions.

I. General Considerations

When a registration statement for an offering is filed with the Securities and Exchange Commission (SEC), firms specify the number of shares to be sold. After the initial registration statement is filed, the underwriters solicit expressions of interest from buyers. It is possible to change the offering size as the issue day approaches. If the change is large, the firm must file an amended registration statement before the issue. (If it is small, filing can occur later.) Based on the expressions of interest received, firms make final pricing and quantity decisions immediately before the issue day.

A. The Firm-Originated Information Hypothesis

The decision to revise the size of an offering can disclose information the firm has about the value of its future cash flows. We consider several versions of this firm-originated information hypothesis, focusing on two well-known models proposed as

²In related work, Phelps and Kremer (1992) analyze whether revisions and withdrawals of equity issues are related to announcement and post-announcement returns.

rationales for offering-announcement effects. Extending these models to revision announcements yields the same predictions: upward revisions should depress stock prices and downward revisions should buoy them. In Section IV, we examine two models with the opposite predictions.

In the Miller and Rock (1985) framework, upward revisions signify greater financing needs because earnings are unexpectedly low; downward revisions indicate less urgent financing needs due to unexpectedly high earnings. Upward revisions should therefore depress stock prices, and downward revisions should boost them.

Similar predictions apply in the Myers and Majluf (1984) model. Following the logic of that model, managers should revise the offering size upward if they think the stock is overpriced. In contrast, if they feel the stock is underpriced, they should either cancel the offering or, if cancellation is too costly, limit the underpricing cost by scaling back the size of the issue. (Cancellation costs could include opportunity losses due to projects evaporating, increased issuance costs from switching securities, and reputation costs from canceling the issue.) Upward revisions should therefore reduce stock prices and downward revisions should raise them.

B. The Market-Originated Information Hypothesis

Under the market-originated information hypothesis, the source of the new information is not the firm but the market itself. There are two variations of this hypothesis (also, see Welch, 1992). According to the first version, neither underwriters nor investors know precisely the size of a firm's investor clientele. Under this scenario, underwriters base the offer price and the original issue size on their estimate of demand elasticity. When the underwriter's solicited declarations of interest exceed the planned issue size, there is an upward revision, and when they fall short, there is a downward revision.³ If underwriters know as much about demand elasticities as the market does, investors will conclude from an upward revision that the stock has a larger investor base, a higher price elasticity of demand, and a higher resale value. This revision will cause a positive announcement effect. In the case of a downward revision, investors will reach the opposite conclusion, and the stock price will fall.

This version of the hypothesis can explain the results reported by Mikkelsen and Partch (1986, 1988) in related experiments. They examine the price behavior

³The auction literature has recognized the value of a multistage auction in which the first stage constitutes information gathering and the second stage results in the sale of the item. Baldwin and Bhattacharyya (1991) discuss this issue in their study of the sale of Conrail.

of completed and canceled common-stock and convertible-debt offerings and observe that 1) canceled offerings have a negative average return between the announcement and the cancellation, and a positive average return at the cancellation; and 2) completed offerings are associated with a positive average excess return between the announcement and issuance, and a negative average return at the issuance. Mikkelsen and Partch interpret these results as being consistent with the Myers and Majluf (1984) model: managers tend to cancel a proposed offering if, in their view, shares are underpriced and attempt to issue common stock when shares are overpriced.

Alternatively, we propose that negative pre-cancellation excess returns can occur because market participants gradually discover that underwriters are having trouble placing the issue. The positive market reaction at the announcement of the cancellation would arise because, contrary to what everyone expects, no additional shares are issued. The opposite sequence of events would hold for completed offerings.

More specifically, during the pre-issue period, the market finds out that the price elasticity of demand for the issue is numerically larger than expected, which explains the price increases between the announcement and issue dates. The negative issue-date effect reflects the resolution of uncertainty about an event (the issue of stock) that depresses stock prices. Consistent with this interpretation, Mikkelsen and Partch (1988) report negative returns only when the stated reason for the withdrawal is "unfavorable market conditions," which occurs in 79% of their sample: no significant price changes can be found when the withdrawal occurs either because private financing has been arranged or because of legal and regulatory problems.

In the second version of the market-originated information hypothesis, investors have different but complementary pieces of information about the firm. In an auction context, the situation is similar to a common-value auction, in which players are trying to estimate the same true value but have different private information (see Rasmusen, 1989). Some investors might have superior abilities to forecast or interpret firm-specific data. Others might be better at gauging uncertainty and the associated risk premia.

Under these circumstances, knowledge of the reservation prices of fellow investors is valuable in formulating each investor's reservation price. The decision to revise the offering size conveys such knowledge. A downward revision leads investors to suspect that subscribers possess unfavorable information. This revision induces market participants to shave their reservation prices and depress stock prices. In contrast, an upward revision discloses favorable information, which buoys prices.

Romer (1993) formalizes these ideas in a more general context. In his model, investors have heterogeneous information and are uncertain about the quality of others' information. Investors know, however, the demand functions of other market participants conditional on the quality of the information they possess. Consequently, the reaction of market participants to changes in a stock's supply reveals the distribution of information quality. When applied to the experiment under consideration, Romer's model implies good news when the issue is oversubscribed and bad news when it is undersubscribed. Upward revisions should therefore lead to price increases and downward revisions to price declines.

Romer's model implies finite demand elasticities for individual securities, a result that has implications for both theory and practice. Finite price elasticities of demand, for instance, 1) question the separability of investment and financing decisions, because the sale of additional securities affects market prices; 2) require portfolio managers to consider the price effect of large trades; 3) become a critical consideration in arbitrage strategies that involve large transactions (Shleifer, 1986); 4) make share repurchase activities a takeover deterrent (Bagwell, 1991 and 1992); and 5) give firms an incentive to care about investor relations, because these relations can widen investor clienteles and make stocks more valuable (Merton, 1987). Although finite price elasticities have fundamental implications, empirically they remain an elusive phenomenon.⁴

II. Data and Descriptive Statistics

We develop our sample from the *Directory of Corporate Financing* published by *Investment Dealers' Digest*, which includes all firm-commitment offerings of stock by industrial firms in the 1980–1984 period. Our sample ends in 1984 because the *Wall Street Journal* ended its routine coverage of stock offerings in that year. To test whether the results are sample-specific, we use the Dow Jones NewsWire to collect the 1992 equity offering announcements and subsequent revisions. We replicate the analysis on the 114 offers made in 1992 and find that the results are largely the same. When the 1992 results differ, we mention that in the discussion.

We exclude initial public offerings, unit offerings, and offerings without a primary component. From the resulting sample of 1,241 issues, we drop:

⁴For direct or indirect evidence, see Amihud and Mendelson (1986, 1988), Bagwell (1991, 1992), Barclay and Litzenberger (1988), Harris and Gurel (1986), Kunz and Angel (1996), Lakonishok and Vermaelen (1986), Lam (1997), Loderer, Cooney, and Van Drunen (1991), Loderer and Jacobs (1995), Ogden (1990), Ritter (1988), Shleifer (1986), and Stulz and Wasserfallen (1995).

- 1) Issues for firms that are not listed in the Center for Research in Security Prices (CRSP) files (15);
- 2) Issues for which there is either no information or conflicting information on the number of shares issued (6);
- 3) Issues for which it is not possible to tell whether they have been revised (434). These are issues the *Wall Street Journal* either completely ignores (108) or mentions just once, namely by reporting that the issue is forthcoming (229) or has been brought to market (97).

Of the remaining 786 issue events with multiple *Wall Street Journal* news items, 352 report issue-size revisions; the other 434 report no revision. Data availability problems reduce the sample to 339 issues with, and 424 issues without, size revisions. As these figures show, revising the issue size is not uncommon; more than 40% of the issues end up being revised. Section III addresses the possibility of selection bias in our sampling procedure.

To illustrate the nature of these revisions, we cite an example that is typical of the announcements we find: on January 5, 1984, the Acme Cleveland Corporation announced it had filed a registration statement with the SEC to sell one million shares. On January 19, the firm revealed that on the issue day (January 18), it had sold 1.5 million shares. Thus, it revised upward by 50% the number of shares sold. Downward revisions are the mirror image of this example, while "no revision" means the firm announced that it sold exactly the number of shares it had first announced.

Descriptive statistics for the issues are reported in Table 1. As a percent of the originally announced issue size, the average revision is 25% for upward revisions and -21% for downward revisions (Panel A). Upward and downward revisions are therefore quantitatively similar. The over-allotment option, i.e., the right of the underwriter to buy more shares from the firm, cannot account for the observed upward revisions. By the National Association of Security Dealers' Rules of Fair Practice, over-allotments can be at most 15% of the original issue size.

The quartiles of the revision size distribution are also similar, offering further evidence that upward and downward revisions are much alike. In the same vein, it appears that firms revising their offering size and those that do not revise are comparable. According to Panel B, their equity values and issue sizes are statistically equivalent. The nonparametric tests reported in Panel B and in subsequent tables are Wilcoxon one- and two-sample signed rank tests (or the Kruskal-Wallis test when there are more than two

groups); the parametric tests reported in subsequent tables are standard one- and two-sample t-tests (or an F-test when there are more than two groups).

In Panels C and D, we compare firms across markets. We combine American Stock Exchange (AMEX) and over-the-counter (Nasdaq) firms and contrast them to New York Stock Exchange (NYSE) firms. The former are combined because they are more like each other in market value and issue size and both are different from the larger NYSE firms.

Panel C reveals that revisions are somewhat less likely for NYSE firms than for firms traded on the AMEX or Nasdaq (the χ^2 test yields a p-value of 0.10). Panel D documents that if a revision occurs, NYSE firms are more likely to revise upward (71% of the cases) than downward (29%); firms in other markets behave similarly, although the difference is not as marked (58% versus 42%). A χ^2 test of the independence of where the stock sells versus the type of revision produces a p-value of 0.02. Why NYSE firms should be more likely to revise upward (i.e., be more conservative at the initial filing) is puzzling. It does not seem to result from using over-allotment options, because fewer NYSE firms have the option (66%) than do Nasdaq firms (88%).

Table 2 reports the timing of the revision announcements. Panel A shows that the majority of the revisions, 75%, are announced one day after the issue date. This result is not surprising. As we pointed out, only for large revisions must firms file what is called a "pre-effective" amendment to the registration statement prior to the issue day. For small revisions, a "post-effective" amendment can be filed after the issue. It might make sense to wait before filing an amendment until the uncertainty about investors' actual interest has been resolved. This delay would leave little time between a revision announcement and the issue date.

Panel B of Table 2 documents that it takes the median firm 13 trading days after the announcement of a stock issue to divulge an upward revision, and 20 trading days to disclose a downward revision. We discuss possible reasons for this delay later in the paper.

The 1992 data show a remarkable similarity to the earlier data in several dimensions but some differences as well. The percentage of firms revising their offers, the split between upward and downward revisions, and the revision size are almost exactly the same in both periods. In the 1992 data, however, there are more NYSE firms, so that, for Panel D of Table 1, we have only three upward revisions and nine downward revisions for Nasdaq/Amex firms. Similarly, the differences noted previously in Panel B of Table 2 are less pronounced in the recent data,

Table 1. Descriptive Statistics

Descriptive statistics for a sample of equity issues, 1980-1984. In Panel B, we measure firm size as market value of the equity one day before the offer, announced issue value as the number of shares originally announced multiplied by offer price, and announced relative issue size as the announced issue value divided by the pre-issue value of the firm's stock. The p-value is for the hypothesis that firms revising and not revising have the same central tendency. In Panels C and D, numbers in parentheses under observed frequencies are row percentages. The p-value is for the hypothesis that the rows and columns are independent. The χ^2 -test probability value for Panel C is 0.10. For Panel D, the χ^2 -test probability value is 0.02.

<i>Panel A. Revision Size</i>			
	Upward Revisions	Downward Revisions	
Number of Observations	211	128	
Minimum	0.1%	-1.0%	
First Quartile	10.0	-8.0	
Median	19.0	-18.0	
Average	25.0	-21.0	
Third Quartile	32.0	-32.0	
Maximum	350.0	-72.0	

<i>Panel B. Revisions by Firm Size and Offering Size (in millions of dollars)</i>			
	Without Revision	With Revision	Wilcoxon Two-Sample Test p-Value
Median Firm Size	\$116	\$105	0.47
Median Announced Issue Value	\$ 20	\$ 19	0.90
Median Announced Relative Issue Size	16.0%	17.0%	0.20

<i>Panel C. Revision Frequencies by Exchange</i>			
	Observed Frequencies		Total
	Revision	No Revision	
NYSE	108 (40%)	159 (60%)	267
AMEX and Nasdaq	231 (47%)	265 (53%)	496
Total	339	424	763

<i>Panel D. Revision Type by Exchange</i>			
	Observed Frequencies		Total
	Upward Revisions	Downward Revisions	
NYSE	77 (71%)	31 (29%)	108
AMEX and Nasdaq	134 (58%)	97 (42%)	231
Total	211	128	339

so that the time between initial and revision announcements is only slightly larger for downward revisions. It is difficult to know whether these differences constitute a real change or whether they occur simply because of small samples.

III. Revision-Announcement Effects and Revision Type

To examine whether the reactions of market participants depend on the direction of the revision,

Table 2. Elapsed Time Between Offer, Issue, and Revision Announcements

In Panel A, the length of the period between the issue date and the revision-announcement date is computed as the issue date minus revision-announcement date. A negative number indicates that the revision is announced after the issue. In Panel B, the period length is the revision-announcement date minus the offer-announcement date. The p-value is for the hypothesis that the central tendency is the same for upward and downward revisions.

<i>Panel A. Number of Trading Days Between the Issue Date and the Revision-Announcement Date</i>			
Period Length	Number of Cases	Percent	Cumulative Percent
≥10	36	10.6	10.6
9	4	1.2	11.8
8	3	0.9	12.7
7	5	1.5	14.2
6	2	0.6	14.7
5	2	0.6	15.3
3	1	0.3	15.6
2	1	0.3	15.9
1	5	1.5	17.4
0	20	5.9	23.3
-1	253	74.6	97.9
-2	7	2.1	100.0

<i>Panel B. Median Number of Trading Days between Offer-Announcement Date and Revision-Announcement Date</i>			
	All Exchanges	NYSE	Nasdaq/AMEX
Upward Revisions	13	8	14
Sample Size	211	77	134
Downward Revisions	20	16	22
Sample Size	128	31	97
Median Comparison Tests, p-Value	<0.01	0.01	<0.01

we sort the sample of announcement effects by upward and downward revisions. Announcement effects are two-day abnormal returns computed from the day before until the day on which the revision is announced in the *Wall Street Journal* (days AD-1 and AD in event time, where AD is the revision announcement day). For each firm, abnormal returns are the difference between actual and predicted returns. We generate predicted returns using a market model by regressing the firm's returns on the CRSP value-weighted index over the 201 trading days from 250 days before to 50 days before the first announcement. We also calculate raw returns and mean-adjusted returns, with generally similar results. Later, we discuss a few instances in which they differ.

In addition to revision-announcement effects, we examine offer-announcement effects. The computational details are analogous to those concerning revision-announcement effects. The only difference is the announcement day is the first day on which the primary distribution is announced in the *Wall Street Journal*.

The results of the analysis appear in Panel A of Table 3. The first two lines show that on average, firms with upward revisions have a more moderate offer-announcement effect than firms with downward revisions (-2.8% versus -3.5%; the difference has a p-value of 0.15). More important, there is a significant difference in revision-announcement effects. Upward revisions lead to significant positive reactions (0.4%), and downward revisions lead to significant price declines (-1.6%). Both parametric and nonparametric tests indicate that the two average returns are significantly different from each other (p-values less than 0.01).

The results are particularly pronounced for firms traded on Nasdaq and AMEX. According to the figures in Panel B of Table 3, upward revisions have no significant effect on the NYSE (-0.4%), but boost prices significantly on the Nasdaq/AMEX (0.9%). Downward revisions significantly depress prices on both the NYSE and Nasdaq/AMEX (-1.4% and -1.7%).

Raw returns are positive but insignificant for NYSE

Table 3. Original Stock Offer and Revision-Announcement Effects

Announcement effects are averages across firms of two-day abnormal returns computed from the day before until the day on which the event is announced in the *Wall Street Journal*. A firm's abnormal return is the difference between the actual return and the predicted return from the market model. For firms with issue-size revisions, Panel A reports average offering-announcement and revision-announcement returns; for firms without issue-size revisions, Panel B reports only average offer-announcement returns. In Panel B, each cell reports average revision-announcement effect, p-value for the hypothesis that the mean is zero, and sample size, in that order.

<i>Panel A. Original Offer and Revision-Announcement Effects</i>				
	Offer-Announcement Effects		Revision-Announcement Effects	
	Average	p-Value	Average	p-Value
Firms with Upward Revisions (n=208)	-2.80%	<0.01	0.43%	0.08
Firms with Downward Revisions (n=125)	-3.51%	<0.01	-1.62%	<0.01
Firms with No Revisions (n=421)	-2.87%	<0.01		

<i>Panel B. Revision-Announcement Effects by Exchange</i>		
	Upward Revisions	Downward Revisions
NYSE	-0.42% (0.13) 77	-1.42% (0.03) 30
Nasdaq/AMEX	0.93% (<0.01) 133	-1.68% (<0.01) 95

firms who revise the issue size upward. For the 1992 sample, the results mostly parallel those reported: downward revisions lead to significantly negative reactions, while upward revisions are associated with an insignificant reaction. Splitting the issues by revision direction and exchange shows that the signs of the revision-announcement effects are in agreement with the earlier sample, but none of the individual cells is different from zero due to small samples.

These findings could be downward-biased. Because most revisions are reported one day after the actual issue date and issue-day effects are often negative (Mikkelson and Partch, 1986), the revision-announcement effects could be confounded by issue-day effects. Lease, Masulis, and Page (1991) discuss the problems of measuring issue-day returns. Bid-ask bounce in closing prices can cause the appearance of a negative issue-day return; the use of a two-day window around the issue day seems to eliminate any problem.

To gauge the relevance of this problem, we compute issue-day raw returns for the sample of firms that do not revise their issue size. Issue-day returns for these firms actually turn out to be positive (0.05%), but insignificant (p-value 0.82). Consequently, even if revision-announcement effects are downward-biased because of concurrent issue-day effects, the bias appears to be minimal or nonexistent.

In making this comparison, we assume that revising

and nonrevising firms are similar. Fortunately, the offer-announcement effects listed in Panel A of Table 3 support this assumption: averages for nonrevising firms are statistically indistinguishable from those recorded for revising firms (p-values for comparing nonrevising firms to upward and downward revisers are 0.86 and 0.16, respectively).

Selection bias is also a possibility, because our sample selection procedure ignores 434 offerings with insufficient news items. Firms engaged in the omitted 434 offerings are less than half the size of those included in the sample (the median market values are \$54 million compared to \$114 million). If information asymmetries are exacerbated in small firms, our sample of revising firms would be subject to selection bias. Clearly, we cannot prove that firms with either no announcements or one announcement are the same as those with multiple announcements. What we can do is compare the first-announcement return for the firms with multiple announcements and revisions (-3.1%); the firms that have multiple announcements but no revisions (-2.9%); and the firms that have just one announcement reporting a forthcoming issue (-3.3%). These figures are not significantly different from each other in either a statistical or an economic sense. If the informational differences among firms were large, we would expect some sort of differential reaction at the first announcement. The data tell a different story.

A third source of bias is partial anticipation.

Underwriters solicit declarations of interest from potential buyers before actually taking the issue to market, and information about the success of the solicitations can reach the general public before the issue day. Thus our estimate of the effect of the revision would be downward biased (in absolute value). To see what happens in the week before the revision, we calculate the cumulative return for the firm for days AD-6 to AD-2, where AD is the day the revision is announced. For the subsample of firms with no issue-size revisions, we also calculate cumulative returns for days ID-6 to ID-2, where ID is the day on which the issue is taken to market.

If we look at the raw returns, all three cases show evidence of partial anticipation. Upward revising firms have prices that rise 0.6% (p-value is 0.29); downward revising firms experience large decreases of -2.9% (p-value < 0.01); and nonrevising firms have smaller decreases of -1.5% (p-value < 0.01). When we calculate market-model adjusted returns, however, all three types experience negative and significant returns: -1.6% for upward revisions, -3.9% for downward revisions, and -3.0% for nonrevising firms. Our estimate of the downward-revision effect could therefore be attenuated due to the fall in the week before, but certainly the same cannot be said for the upward-revision case.

IV. The Firm-Originated Information Hypothesis and the Evidence

Overall, the evidence conflicts with the two versions of the firm-originated information hypothesis discussed in Section I. The market's reactions are contrary to those predicted. In particular, our findings reject the idea that the models of Myers and Majluf (1984) or Miller and Rock (1985) can explain revision-announcement effects. But even if the evidence clashes with these models, we cannot conclude that issue-size revisions never convey information about future cash flows. We can invent scenarios under which the observed revision-announcement effects are triggered by the arrival of cash-flow information that originates from the firm. Although we cannot investigate every possible scenario, two variations are plausible enough to deserve closer scrutiny.

A. The Project-Quality Hypothesis

The first variation is that issue-size revisions convey signals about the quality of the firm's investment prospects. Upward revisions signal that growth opportunities are better than expected, and downward revisions signal the opposite. This hypothesis could draw on Cooney and Kalay's (1993) refinement of the Myers and Majluf (1984) model. According to that refinement, an equity issue conveys information

primarily about the value of the firm's investment projects, and only secondarily about its assets-in-place, as in the original model. The overall information can be positive if the issue discloses a valuable new project. When extended to issue-size revisions, the Cooney and Kalay model implies that these revisions reveal information about the firm's investment projects. Upward revisions could signal better projects and downward revisions could signal worse projects, exactly as we find in Table 3.⁵

Although the project-quality hypothesis is plausible, there are reasons to doubt it. First, it implies that the value of the revision announcement depends on the purpose of the issue, i.e., it is more significant for issues earmarked for investment projects than for issues intended to refinance debt. Debt refinancing is not project related and should therefore be less informative. To examine this prediction, Table 4 segments revision-announcement effects by the stated purpose of the issue (gathered from the prospectus). The evidence does not support the prediction. Revision-announcement returns are no less pronounced for debt reduction than in other cases. Particularly when the revision is downward, the most extreme returns are associated with debt reductions. Parametric and nonparametric tests of the null hypothesis that all categories are equal never reject that null for either upward or downward revisions.

Second, and more important, we examine the *Wall Street Journal* revision announcements for evidence of news items related to investment projects. If issue-size revisions are due to changes in project quality, it would be surprising if firms did not mention that information directly. Of the more than 300 revision announcements in the *Wall Street Journal*, only about 5% discuss the reason for the change in the issue size. Of these, not a single one discusses investment policy; they all refer to "market conditions" as the cause of the revision. Some are more specific in mentioning insufficient demand or stock price changes as the proximate event. Neither reference is consistent with the project-quality hypothesis.

B. The Firm-Certification Hypothesis

The second variation of the firm-originated information hypothesis is that issuing firms undergo a certification through the underwriters and the capital market while the offer is pending. In some cases, the information from this review is positive, and in others, it is negative. If investment bankers have reputational incentives to force the firm to adjust its offering to reflect this information, issue-size revisions could be informative. Upward revisions could reveal good news,

⁵The market feedback hypothesis advanced in Jegadeesh, Weinstein, and Welch (1993) could also be extended to these notions of project quality.

Table 4. Revision-Announcement Effects by Use of the Proceeds

Revision-announcement effects are averages across firms of two-day abnormal returns computed from the day before until the day on which the event is announced in the *Wall Street Journal*. A firm's abnormal return is the difference between the actual return and the predicted return from the market model. Each cell reports average revision-announcement effect, p-value for the hypothesis that the mean is zero, and sample size, in that order.

	Upward Revisions	Downward Revisions
Acquisitions	0.40% (0.80) 11	0.21% (0.84) 7
Capital Expenditures	-0.53% (0.59) 15	-0.22% (0.71) 11
Expansion	-0.10% (0.93) 16	-2.33% (0.23) 8
Working Capital	0.67% (0.29) 29	-1.27% (0.23) 14
Reduce Indebtedness	0.69% (0.09) 73	-2.51% (<0.01) 42

and downward revisions could reveal bad news, consistent with the pattern reported in Table 3.

Although the firm-certification hypothesis can explain the basic result in Table 3, it conflicts with much other evidence. First, for the story to hold, revisions should be announced before the issue, not afterward. Otherwise, the underwriter's reputation would suffer because material information would be withheld from the subscribers. In fact, if material information were withheld by underwriters, they would have an explicit liability to buyers under the Securities Act of 1933. Because about 80% of the revision announcements occur *after* the issue day, it is difficult to make a case for the certification hypothesis.

Second, if issuing firms really revise their offerings in reaction to new information about future cash flows, we would expect them to mention that information when they announce the revision. The underwriters would certainly demand that they do so. Yet, as we report, few revision stories in the *Wall Street Journal* mention anything other than the revision itself, and the few that do refer only to selling conditions.

Before the revision announcement, there seems to be very little information in the news about the issuing firms: for approximately 70% of our sample firms, there are no stories between the date of the offering announcement and the date of the revision announcement. About 20% of the sample has a dividend or earnings announcement between the

initial announcement and the revision announcement. These are items that could disclose information about future cash flows. The remaining 10% of the sample has other announcements. Many of these appear to be innocuous; stories on shareholders approving an increase in the number of authorized shares or a mention of the firm in a story about the industry.

It is impossible to easily categorize these stories into those that can be considered real news and those that can be ignored. Instead, we segment the sample into a set of firms that have intervening announcements and those that do not. If both revision announcements and intervening news items convey information about future cash flows, then firms with such intervening news items will tend to have less informative revision announcements. When we compare the revision-announcement effects for firms with intervening information releases with the effects for all other firms, we do not find a significant difference.

Finally, firms appear to be reluctant to report that the offering size has been reduced. It takes a median of 20 trading days from the offer-announcement date to reveal downward revisions, compared with only 13 days for upward revisions. It is not clear why underwriters with reputations at stake would hesitate to disclose bad news. It seems more likely that the difference is related to the ease or difficulty of marketing the new issue.

V. The Market-Originated Information Hypothesis and the Evidence

In contrast to the firm-originated information hypothesis, the market-originated information hypothesis is consistent with the three empirical regularities we have found: 1) there are significant price changes; but 2) there is no apparent significant news about fundamentals that would justify these changes; and 3) market participants cite market developments as an important cause of the revisions.⁶

First, the hypothesis predicts positive returns in reaction to upward revisions and negative returns in reaction to downward revisions. Upward revisions could reveal unexpectedly larger price elasticities of demand or the inadequate aggregation of favorable information among market participants. Downward revisions could imply the opposite. Second, the hypothesis is consistent with the lack of cash-flow-related news items at the time of the revision announcement. Third, the only items the *Wall Street Journal* reports in revision announcements are statements about market conditions, precisely what we would expect in a world of finite price elasticities of demand. The market-originated information hypothesis can also explain why revisions are less likely for NYSE firms and more likely for Nasdaq and AMEX firms. Investors know less about the demand curves of firms that are not traded on the NYSE.

Admittedly, the market-originated information hypothesis does not account for all the facts. The market's response to revision, for instance, is asymmetric: upward revisions elicit smaller responses than do downward revisions. It is not clear why upward revisions on the NYSE produce essentially no response; it is also puzzling that issuing firms' stock prices do not rise before upward revisions as much as they fall before downward revisions. One possibility is that because of overallocation options, upward revisions are less surprising. There is also evidence that short-sellers put downward pressure on stock prices in the week before an issue, an effect that could be especially pronounced when an issue looks hard to place (Kadlec, Loderer, and Sheehan, 1995).

Even if the market-information hypothesis explains many of our results, there is still the issue of which of the two versions is more consistent with the data. The first version relies on uncertainty about price elasticities of demand, and the second on heterogeneous information. Demand elasticities are hard to measure, and a convincing test of heterogeneous

information is hard to design. At least two empirical regularities, however, are easier to explain by relying on elasticity uncertainty.

We document the first regularity by partitioning the sample according to firm size (small or large) versus revision (yes or no). We define large firms as those above the median size in terms of market value and small firms as those below the median. For large firms, 43% revise the size of the issue and 57% do not; for small firms, the equivalent numbers are 46% and 54%. A χ^2 -test of the independence of firm size and revision decision cannot reject the null hypothesis (p -value = 0.40). There is no relation, therefore, between firm size and likelihood of a revision.

It is not clear how this phenomenon can be related to heterogeneous reservation prices among market participants. In contrast, the observation makes sense if market participants (and underwriters) do not know the exact value of aggregate demand elasticities. If revising is not excessively costly, the original issue size may be merely indicative, and underwriters, regardless of whether the firm is large or small, may wait for the declarations of interest of prospective investors to set the final issue size. If so, large firms could end up revising as often as small firms.

This procedure of letting the market decide issue size can explain why so many issues in the sample are revised (44%). Offer-size revisions are not necessarily an indication of mistakes attributable to incompetence or inexperience, but rather a deliberate method of coping with uncertainty about demand elasticities.

This conclusion is buttressed by the finding that the ranking of the firm's underwriter has no effect on revision probability. If we rank underwriters into two groups, a "Top-20" group and an "Other" group, based on total underwritings during our sample period, we find no association between whether the firm revised and the ranking of their underwriter. About 44% of firms for both underwriter groups have revisions to their offerings. In addition, the average numerical rank of underwriters for firms revising versus not revising the issue size is exactly the same. We interpret this evidence to mean that issue-size revisions are not mistakes, rather they are a way to cope with uncertainty about how much additional stock the market can absorb.

The evidence reported earlier in Table 3 confirms this interpretation. Offerings that are revised upward trigger average announcement returns (-2.8%) that are smaller than those caused by offerings that are reduced

⁶The scenario outlined here has a counterpart in initial public offerings (IPOs). Hanley (1993) provides evidence that the information gathered by underwriters during the period from first registration to issue day affects both the per-share price and the number of shares issued by the firm. When investors

indicate strong demand, average offer prices are about 21% higher than the initial filing had indicated and number of shares increases by 10% on average; conversely, when investors show little interest in an issue, offer prices decline by 22% and the number of shares offered decreases by 10%.

in size (-3.5%). It is as if underwriters wait to see the reaction of the market to set the final size of the issue. More favorable market reactions encourage firms and underwriters to boost offering size. The opposite seems to be the case when the reaction is negative.

As it turns out, the difference is driven by Nasdaq/AMEX firms: their offer-announcement effects are -3.1% for eventual upward revisions compared to -3.9% for eventual downward revisions. The corresponding figures on the NYSE go in the same direction, but the difference is small (-2.3% and -2.4%). Interestingly, Nasdaq/AMEX firms are also more likely to revise than NYSE firms (Panel C of Table 1).

The second empirical regularity of relevance is the apparent reluctance of firms to disclose downward revisions (from Table 2, it takes the median firm seven more trading days to disclose downward revisions than it does to announce upward revisions). Even if revisions uncover hidden information, there is no reason positive information should come out sooner than negative information. In contrast, uncertainty about price elasticities of demand implies this discrepancy. Issues that are not well-received by the market probably take more time to sell; the extra week that elapses before downward revisions are disclosed could simply be extra time devoted to selling efforts that are ultimately unsuccessful.

VI. Conclusions

We examine whether the disclosure of a revision in the announced size of a primary stock offering releases firm-originated or market-originated information. Firm-originated information directly relates to future cash flows and is intentionally or accidentally released by the firm. Market-originated information refers to individual investors' reservation prices, and has not

yet been aggregated in stock prices.

We find no evidence of firm-originated news. The lack of firm-originated news is inconsistent with the Myers-Majluf model, according to which the disclosure, say, of an upward revision in issue size would tell market participants that the stock is overpriced. The evidence is also inconsistent with the Miller-Rock model, according to which the same upward revision would seem to suggest that internally generated funds fall short of the firm's financing needs. Moreover, during the revision process, no information about project quality or firm quality as certified by the underwriters is revealed.

If revisions do not convey firm-originated information, they must convey market-originated information. That information could be firm-specific information not yet aggregated in prices. Romer (1993) shows that, if investors are uncertain about the quality of their information, market prices do not always fully reflect all the information available about the firm. Changes in supply can elicit that information and impound it in prices. Alternatively, issue-size revisions could disclose information about the size of investor clienteles.

In either case, support for the market-originated information hypothesis is indirect support for the notion of finite price elasticities of demand. Issue-size revisions could be one of the events investors watch closely to gauge aggregate demand elasticities. Because revisions are frequent, particularly on Nasdaq/AMEX, and because upward revisions are more likely following a more positive original offering-announcement effect, underwriters also appear to be looking to the market for elasticity clues. They "test the waters," and then they revise the issue size up or down depending on the feedback they receive from the market. ■

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