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The revival of shelf-registered corporate equity offerings ☆

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Abstract

We report that traditional seasoned equity offerings (SEOs) are no longer firms' preferred choice for raising seasoned public equity. Traditional offerings have recently been surpassed by shelf-registered offerings in terms of both annual frequency and total capital raised. This represents a dramatic shift from the 1980s, during which the overwhelming majority of firms favored traditional over shelf-registered offerings. We find that the growth in shelf use is related to firms increasingly valuing and using the option feature of shelf registration to defer offerings. Moreover, the evidence indicates that the way firms now use shelf offerings resolves the shelf under-certification problem and results in no larger market penalties and significantly lower underwriter fees relative to non-shelf offerings. Finally, firms often use universal shelf filings and choose between debt and equity offerings based on the prevailing relative market conditions.

JEL classification: G30; G32
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1. Introduction

In the past decade, extensive research has been devoted to the study of seasoned equity offerings (SEOs), although limited attention has been paid to an increasingly common method of raising public equity: shelf-registered offerings.[1] In the first two years following the implementation of shelf registration, 1982–83, firms experimented with shelf equity and approximately one-quarter of all primary industrial offerings were shelf-registered. Over the remainder of the 1980s, however, very few industrial firms issued shelf equity (Denis, 1991). Since 1990, particularly since 1997, there has been a significant revival in the use of shelf registration. Over the recent five years, 1999–2003, almost half of all primary equity offerings were shelf-registered and total proceeds of shelf offerings exceeded proceeds of traditional offerings.

The received wisdom in the literature attributes the demise of shelf offers in the mid-1980s to the problem of under-certification, hence greater market penalty, from the limited opportunity for underwriters to perform due diligence in

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[1] In 1982 the SEC introduced Rule 415 (shelf registration), allowing firms to register securities that they reasonably expect to issue over the next two years. This enables firms to conduct "off-the-shelf" offerings with little or no advanced notice.

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shelf-registered offerings (Denis, 1991 and Sherman, 1999).[2] What explains the dramatic revival of shelf-registered equity offerings during 1990–2003? The objective of this paper is to answer this question.

The research methodology used in Fama and French (2001) to explain 'disappearing dividends' would appear to be well suited to explain 'appearing shelf offers.' This research design could potentially explain whether the increased use of shelf offers is due to (i) increase in the prevalence of firm characteristics established to be associated with shelf offerings in the 1980s and/or (ii) an increased propensity to use shelf registration regardless of firm characteristics. However, this methodology implicitly assumes that the functional relationship between firm characteristics and the event probability is stable over time. Whereas such an assumption is entirely plausible in the case of dividend decisions given the long history of firms' and the market's experience with dividends, it may not hold for the shelf offer decision. Shelf offerings have a relatively short history encompassing a possible learning period. For example, we point out a significant shift in how firms use shelf offers now compared to the early 1980s. In the early 1980s issuers typically offered all shelf-registered shares in a single offering with a median of 7 days between the registration and offer dates, identical to how they used traditional offerings (Denis, 1991). In our sample period, 1990–2003, shelf offers are often deferred by months or years after registration, and frequently abandoned.

Our findings indicate that the relation between firm-specific uncertainty and the decision to choose shelf registration has not been stable over time, suggesting a structural shift in how uncertainty influences firms' choice between procedures. Whereas Denis (1991) reports that in the 1980s the probability of shelf registration is a *decreasing* function of residual volatility, we find that during 1990–2003 it is an *increasing* function of this variable. The Denis (1991) finding is consistent with the under-certification hypothesis; i.e. high volatility firms face greater under-certification costs in the form of a market penalty and are therefore less likely to use shelf offers. We interpret our findings as consistent with firms increasingly valuing and using the deferral option associated with shelf registration. The value of this option is increasing in the firm's volatility resulting in the positive association between volatility and the probability of a shelf offer.

The combination of high volatility and the inherent under-certification in shelf offers should result in a severe market penalty, *ceteris paribus*. Does the option value associated with high volatility come at too high an under-certification cost? We argue that it is rational for issuers to choose shelf registration only when their circumstances are such that they are partially certified through mechanisms other than underwriter due diligence. We provide evidence of such behavior. First, we find that during 1990–2003 firms are more likely to favor shelf offerings after already being certified in prior seasoned offerings. Second, we report that shelf offerings, relative to traditional SEOs, are associated with significantly lower abnormal stock price runups in the six months prior to filing and the twelve months prior to offering. The evidence suggests that shelf users do not opportunistically time offers to take advantage of temporarily high prices[3] and therefore are less likely to be perceived by the market as overvalued, reducing the need for certification.

Consistent with the reduced need for certification, we report that during 1990–2003 the market reaction to shelf filings is significantly less negative than the reaction to non-shelf filings, on average, which is a reversal from the 1980s. However, since only a small percentage of shelf filings lead to an offer in our more recent sample period, it is possible that rational market participants incorporate the probability of issuance when discounting the stock price at shelf filings. This would imply that the remainder of the discount takes place at the earlier of the subsequent pre-offer filing date or actual offer date. Comparing the total market penalties, estimated as the sum of the reactions at filings and offer, we report that the market penalty for shelf offers is no larger than for traditional non-shelf offers.

Furthermore, we report that the median market penalty is insignificant for shelf offers that are associated with a reduced need for certification, i.e., (i) represent a firm's third or subsequent offering and (ii) are associated with low pre-filing stock price runup. However, we find a large and significantly negative market reaction for the small percentage of shelf-registered offers that represent a firm's first seasoned equity offering *and* are associated with large pre-filing abnormal stock price runups. In these circumstances, the shelf under-certification problem is costly. The limited use of shelf registration by firms whose circumstances do not reduce the need for certification, and the large market penalty imposed on them if they nevertheless choose to do so, possibly explains the continuing (albeit diminishing) use of the non-shelf procedure in spite of the benefits associated with shelf registration.

[2] Denis (1991) and Sherman (1999) argue that Rule 415 erodes underwriters' ability to conduct a thorough due diligence investigation since there is often little time to adequately certify an "off-the-shelf" offer. Denis provides empirical evidence to support the hypothesis that the less certified shelf offers elicit a larger market penalty, *ceteris paribus*. Sherman develops a model showing that shelf registration erodes certification offsetting any cost benefit arising from increased competition among underwriters.

[3] Heron and Lie (2004) examine operating performance around equity offerings and conclude that "corporate managers – are less likely to opportunistically time announcements of shelf registration – than the announcement of regular equity offerings".

Since shelf offerings are typically "pre-certified" as described above, we expect that underwriters can charge lower fees due to a lessened need for an intensive due diligence investigation. Our evidence indicates that indeed shelf issuers incur significantly lower underwriter fees than non-shelf issuers.

An additional change in how firms use shelf registration is related to the SEC's October 1992 adoption of the unallocated or universal shelf rule, which accounts for 85% of our sample shelf offers (the other 15% are allocated for equity only). The key feature of this regulation is that universal filers are not required to specify a particular security until the issue date, allowing them to issue debt and/or equity without advanced notice. Although debt offerings are not the focus of this paper, we provide preliminary evidence that universal shelf issuers choose between the equity and debt markets depending on their prevailing relative receptiveness to the offer when an emerging investment requires financing. This choice by universal filers is not inconsistent with our evidence that shelf issuers are less likely to engage in opportunistic timing than non-shelf issuers based on long-term stock price runups. Rather, it illustrates that universal shelf filers defer the choice of security enabling them to enter the more receptive market at the time of issuance. Specifically, we find that the universal shelf filings that culminate in equity offerings have larger market-adjusted stock price increases in the 30- and 60-day period before the offer date than those that culminate in debt offerings. Similarly, the universal shelf filings that culminate in debt offerings are associated with greater declines in interest rates between the filing and the offering dates than those that culminate in equity offerings. These findings are consistent with those of Kadapakkan and Kon (1989) and Barry et al. (in press) that firms issue debt when interest rates are low, and also support the survey evidence of Graham and Harvey (2001) that firms care about interest rates and recent stock returns in making security issue decisions.

There are two recent studies on the topic of shelf-registered equity offerings. Heron and Lie (2004) document a rebound in the use of shelf-registered offerings in the 1990s, but focus more generally on the information conveyed by various types of equity offerings. Their conclusion that shelf offers are less likely to be opportunistically timed, relative to non-shelf offers, supports our argument of reduced certification needs for shelf offers. Bethel and Krigman (2006) focus primarily on a firm's cost-based SEC registration strategy. They find that high information asymmetry firms choosing (under-certified) shelf registration incur large market penalties. This is consistent with our result that shelf offers not certified by alternative means suffer relatively large price declines. The objective of our paper is to explain the revival of shelf equity following its demise in the 1980s. The incremental contributions of our study are (i) the linkage of the shelf revival to firms' increasing use of the option to defer shelf offers, or to choose between debt and equity offers in the case of universal filings, (ii) the preference by high volatility firms for shelf offers, consistent with the positive association between option value and volatility, (iii) the use of alternative certification mechanisms by shelf issuers to offset the potential under-certification problems associated shelf offers, resulting in (iv) comparable market penalties and lower underwriter fees relative to non-shelf offers. These results represent a reversal of earlier findings in the literature supporting the demise of shelf equity offerings.

The paper is organized as follows. Section 2 describes the data and sample characteristics, and discusses the recent revival of shelf equity offers. Section 3 explores the potential explanations of the shelf revival: the easing of shelf eligibility requirements, changes in the characteristics of shelf issuers, and changes in how firms use shelf registration impacting the benefits and costs of shelf offers. Section 4 quantifies the relative costs of shelf and non-shelf offers. Section 5 reports evidence on the (additional) advantages of universal shelf filings and Section 6 concludes the paper.

2. Sample description

2.1. Data

The sample for this study is collected from Securities Data Company's (SDC) Global New Issues database. The sample consists of primary[4] shelf registration filings and offerings and primary non-shelf seasoned equity offerings of common shares during the period 1990–2003, and excludes initial public offerings, rights offers, unit offers, ADRs,

[4] We define primary issues as those in which 100% of the shares filed are primary. We use this definition because the universal or "unallocated" shelf registration procedure accounts for 85% of our sample shelf equity offers, and according to the SEC, "…secondary offerings […] may not be included among securities registered on an unallocated basis in a Rule 415 offering. Securities offered by selling shareholders may be registered on the same registration statement as an unallocated shelf offering, but a separate section in the fee table must be included for the selling shareholders. That section lists the class(es) of securities registered and allocates a dollar amount to each class." (SEC release no. 33-7943) Thus, unallocated securities in universal shelves are 100% primary and comparing these offers to mixed primary/secondary non-shelves can distort a comparative analysis of shelf and non-shelf offers. Additionally, secondary shelf offers are largely associated with Private Investment in Public Equity (PIPE) transactions and therefore, we believe, should be excluded from our analysis.

Table 1
The annual frequency and total proceeds of traditional SEOs and shelf offers

	All traditional non-shelf offers		Shelf-eligible non-shelf offers		Shelf offers	
	Number	Total proceeds (millions)	Number	Total proceeds (millions)	Number	Total proceeds (millions)
1990	34	1289.6	14	812.1	0	–
1991	158	9542.7	67	7119.5	2	196.3
1992	127	8658.8	52	6806.7	3	276.8
1993	154	9316.4	87	6965.5	7	1237.0
1994	89	4544.9	50	3104.2	11	1498.2
1995	150	11,003.0	102	9145.8	7	1216.2
1996	183	13,032.6	111	10,260.2	8	1133.0
1997	120	7178.7	69	5116.9	26	3692.5
1998	65	6168.8	39	5212.0	31	7282.6
1999	90	11,847.1	63	9855.9	47	10,558.3
2000	99	13,893.2	79	11,362.8	47	16,213.9
2001	49	5695.1	38	3698.5	58	14,085.2
2002	62	8752.1	47	7561.6	55	9559.4
2003	48	4608.1	39	3958.2	84	11,558.5
Total	1428	115,531.1	857	90,979.9	386	78,507.9

Shelf-eligible non-shelf issuers are those that are eligible to use Form S-3. Eligible firms are those that (i) have been timely in their periodic reporting for the last twelve months, (ii) have investment grade debt and have not defaulted in the past year, and (iii) have a market value of public shares held by investors (public float) of at least 50 million for offers filed before October 22, 1992, and a public float of at least $75 million for offers filed after October 22, 1992. Only primary offers are included. Primary offers are those in which 100% of shares (or dollar amount) filed are primary.

offers by financials (SIC code 6000–6999) and utilities (SIC code 4900–4999), and offerings by non-U.S. firms. To be included in the sample, firms must be listed on the NYSE, AMEX, or NASDAQ, and must have at least 100 days of pre-filing stock return data available from the Center for Research in Securities Prices (CRSP) as well as financial data available from COMPUSTAT.

The sample is collected from two sources within SDC's Global New Issues database: (i) SDC's U.S. public new issues database, which includes all equity offers, and (ii) SDC's U.S. shelf registration database, which includes all shelf filings (even those that do not lead to offers) and distinguishes between universal and non-universal shelf filings. Most previous studies, with the notable exception of Bethel and Krigman (2006), examine only completed shelf offerings, which can result in a bias in our sample period 1990–2003 because the majority of shelf filings do not lead to equity offers.

To identify our shelf registration sample, we match offers from the new issues database with their respective filings on the shelf registration database. There are 53 shelf offers on the new issues database that do not have a matching observation on the shelf registration database. We manually check each of these observations for accuracy and determine whether the offer is from a universal or from an equity filing by searching the Dow Jones News Wire and SEC filings. We are able to match 41 observations manually. In the remaining 12 cases, SDC classified the observation on the new issues database incorrectly as a primary shelf offer and thus we exclude these from the sample. Next, we manually check 10% of the sample of universal shelf offers for accuracy and do not find any errors. We also check the complete sample of shelf offers that are classified as non-universal. We correct seven observations in which universal offers are incorrectly classified by SDC as non-universal offers, and six observations in which non-universal filing dates are incorrect. Our final sample includes 343 non-universal shelf registration filings (i.e. allocated for equity only), of which only 53 lead to at least one equity offer, and 1094 universal shelf registration filings, of which 288 lead to at least one equity offering. There are a total of 386 shelf-registered equity offers: 59 non-universal offers and 327 universal offers. We also collect a sample of universal debt offerings, which includes 820 observations. The sample of non-shelf equity offerings is collected from the new issues database, and contains 1428 observations.

Some of our tests use registration method as a choice variable, thus we restrict the sample of non-shelf issuers to those firms whose eligibility for shelf registration is ensured through their use of form S-3 (discussed later). This restriction reduces the sample of non-shelf offers from 1428 to 857. We use this restricted sample in all of our tests.[5]

[5] We also conduct all of our tests using the complete sample of 1428 non-shelf offers. The results are qualitatively similar to those reported in the paper.

Table 2
Descriptive statistics

	Shelf-eligible non-shelf offers		Shelf offers		Mean	Median
	Mean	Median	Mean	Median	*p*-value	*p*-value
Book assets (mil.)	1363.9	174.0	2309.0	641.8	0.0178	< 0.0001
Market value of equity (mil.)	1122.8	410.8	3456.6	924.4	< 0.0001	< 0.0001
Filing size (mil.)	123.4	69.2	742.7	320.2	< 0.0001	< 0.0001
Scaled filing size	0.19	0.15	0.47	0.31	< 0.0001	< 0.0001
Proceeds (mil.)	106.2	64.8	203.4	110.4	< 0.0001	< 0.0001
Market-to-book	3.01	1.71	2.62	1.52	0.0674	0.1950
Sales	0.88	0.74	0.66	0.46	< 0.0001	< 0.0001
Long-term debt	0.21	0.16	0.33	0.27	< 0.0001	< 0.0001
Capital expenditures	0.08	0.05	0.10	0.06	0.0086	0.0304
Residual volatility (%)	3.64	3.41	3.77	3.36	0.2437	0.9653
Total volatility (%)	3.74	3.43	3.91	3.52	0.1376	0.5242
Number of observations	857	857	386	386		

The market value of equity is calculated as the stock price two days prior to filing multiplied by the number of shares outstanding at that time. The market-to-book ratio is the market value of equity plus book value of debt divided by total book assets. Filing size is the dollar amount filed. Scaled filing size is the ratio of the filing size to the market value of shares outstanding two days prior to filing. Sales, long-term debt, and capital expenditures are each scaled by total book assets. All COMPUSTAT variables (book assets, market-to-book, sales, collateral, long-term debt, and capital expenditures) are year-end figures for the year prior to filing. Residual volatility is calculated from the Scholes and Williams (1977) market model using a 200-day estimation period ending 20 days prior to the filing date. Total volatility is calculated as the standard deviation of daily stock returns over 180 days immediately prior to the filing date. *p*-values for differences in means and medians between shelf and non-shelf offers are based on standard *t*-tests and Wilcoxon sign-rank tests, respectively.

2.2. Shelf and non-shelf equity offers since 1990

Table 1 reports the yearly distribution and total proceeds of shelf-registered equity offers and non-shelf offers over the period 1990–2003. The annual number of shelf equity offers has risen from zero in 1990 to 84 in 2003, with a large surge in shelf use beginning in 1997. The use of the non-shelf procedure has generally declined since 1997 and we observe similar relative trends in proceeds from offerings. In 1998, annual shelf proceeds surpassed annual non-shelf proceeds, and the gap has widened since 2000.

Table 2 provides descriptive statistics for shelf and non-shelf offers. Compared to non-shelf issuers, shelf issuers are substantially larger based on both book assets and the market value of equity, and make larger $ offers based on both the amount filed and the offer proceeds. As a percentage of market value, shelf issuers make larger filings. As a percentage of total assets, shelf issuers have lower sales, higher long-term debt, and higher capital expenditures than non-shelf issuers. Additionally, the market-to-book ratio of shelf issuers is lower and the total and residual stock volatilities of the two groups are comparable.[6]

3. Explanations for the revival of shelf equity offerings

In this section we examine three potential explanations for the recent growth in the use of shelf equity offerings: (i) easing of shelf eligibility requirement in the 1990s, (ii) changes in the characteristics of firms choosing shelf registration, and (iii) changes in the way firms use shelf registration impacting the benefits and costs to shelf issuers.

3.1. Easing of eligibility requirements

A possible explanation for the increase in shelf use is the easing of shelf requirements. Firms can register shelf offerings only if they are eligible to use Form S-3. Broadly, firms are eligible to use Form S-3 if they (i) have not defaulted on dividend payment and indebtedness since the end of the last fiscal year, and (ii) have a public float above a

[6] From unreported results, shelf issuers using universal filings, relative to issuers using non-universal filings, are typically larger and make larger offers, have higher debt ratios and capital expenditures and lower market-to-book ratios and volatility.

Table 3
Number of days between filing and offer dates

Offer year	Non-shelf offers		Shelf offers	
	Mean	Median	Mean	Median
1990	26	26	–	–
1991	25	21	91	91
1992	45	26	147	147
1993	34	29	67	49
1994	39	29	72	48
1995	37	31	89	92
1996	41	25	192	134
1997	58	29	173	88
1998	36	28	84	57
1999	52	35	180	84
2000	37	30	210	99
2001	95	35	247	148
2002	110	25	301	184
2003	108	20	346	199
Entire period	49	30	232	111
Entire period for firms that use both procedures	78	29	220	127

Mean and median number of days between the filing date and offer date for shelf and non-shelf equity offers by year. The full sample consists of 386 shelf offers and 857 non-shelf offers, and the sample of firms that offer using both procedures consists of 159 shelves and 113 non-shelves.

stipulated a minimum. In 1992 the SEC reduced the public float requirement from $150 million to $75 million. Although this rule change increased the number of shelf-eligible firms by about 30%,[7] only 19 of the 386 shelf offers in our sample do not meet the original $150 million public float requirement. Additionally, in May of 1997 the SEC began allowing companies to use non-voting common shares to meet the $75 million public float requirement. In our shelf sample, however, every issuer meets the earlier requirement of $75 million in voting common shares. We conclude that the easing of shelf requirements is not the primary explanation for the growth in shelf use.

3.2. Changing characteristics of shelf issuers

Consistent with the under-certification hypothesis (Denis, 1991 and Sherman, 1999), Denis (1991) documents that in the early 1980s the primary determinant of a firm's choice of shelf versus non-shelf registration was its (residual) volatility. High volatility firms incurred larger market penalties from reduced opportunities for due diligence and were less likely to choose shelf registration. The line of reasoning used in Fama and French (2001) to explain the decline in dividend payers would suggest that the growth in shelf users could be the result of changing firm characteristics over time towards lower volatility. However, our data and analyses document that over our sample period the *opposite* is true.

As a preliminary test of the relation between the use of shelf offerings and the residual volatility of the shelf issuers, we examine the time series trend in volatility over three sub-periods (1990–96, 1997–00, and 2001–03) representing significant jumps in the use of shelf offerings (see Table 1). We report that the sharp growth in shelf use coincides with large *increases* in stock volatility. The mean (median) residual stock volatility increases from 2.5% (2.12%) during 1990–96 to 3.3% (2.96%) during 1997–2001 and to 4.38% (4.07%) during 2001–03.[8] We also observe an increase in the residual volatility of non-shelf issuers suggesting a temporal effect. However, we believe that an increase in aggregate volatility increases the value of the shelf option to defer or eventually abandon relative to the non-shelf option to withdraw. Thus as volatility increases, we argue that shelf offers become relatively more advantageous, *ceteris paribus*, than traditional offers. Later in Section 3.3.3 we report in a fully specified logistic regression that the likelihood of choosing shelf over traditional registration is *positively* related to the issuing firm's residual volatility.

[7] See "SEC Proposes Easing Shelf Registration Rules," Dow Jones News Service, July 16, 1992.
[8] In comparison, Denis (1991) reports that during the 1980s the mean (median) shelf issuer's residual volatility is 2.02% (1.70%).

Table 4
Shelf filings that lead to equity offerings

Filing year	Number of shelf filings	Number of shelf filings that lead to at least one equity offer	Percentage of shelf filings that lead to at least one equity offer
1990	4	0	0%
1991	24	2	8
1992	9	2	22
1993	35	10	29
1994	42	9	21
1995	84	10	12
1996	83	11	13
1997	120	25	21
1998	142	42	30
1999	142	46	32
2000	170	46	27
2001	224	60	27
2002	173	36	21
2003	185	42	23
Total	1437	341	24%

Yearly distribution of the total number of shelf filings and the number (and percentage) of those filings that lead to at least one equity offering. Only primary filings are included. Primary filings are those in which 100% of shares filed are primary.

These findings suggest a structural shift in the relationship between the choice of the registration method and firm characteristics over time.

In the following section we argue that this structural change is a result of firms (i) increasingly valuing the shelf deferral option and (ii) reducing the need for certification (and therefore issuance costs) through other mechanisms.

3.3. How firms use shelf registration

3.3.1. The shelf deferral option

The shelf procedure provides issuers with the option to defer equity offerings. In the 1980s, issuers typically made little use of the option to defer. In our more recent sample period, firms routinely use the option to defer an offering, often indefinitely. The recognition and use of this valuable option is one potential reason for the recent growth in the use of shelf registration.

Table 3 reports that over the period 1990–2003, the median shelf offering is conducted 111 days after the filing date.[9] This figure is comparable for universal and non-universal shelf offers, which have median deferrals of 111 and 103 days, respectively. In contrast, the median non-shelf offer takes place only 30 days after the filing date.[10] These differences are similar when we include only issuers that issue both shelf and non-shelf equity (272 total observations: 159 shelf offers and 113 non-shelf offers). We note that the delay in shelf offers has increased in the final few years of our sample period. In fact, 25 shelf offers occur more than two years after filing, suggesting that the two-year shelf window is not rigid.

In addition to this lengthy delay, most shelf filings never culminate in an equity offer. Table 4 reports the yearly distribution of the total number of shelf registration filings and the number of filings that lead to an equity offering. Only 341 of the 1437 sample filings lead to at least one equity offer.[11] Both universal and non-universal filings are associated with a low probability of issuance. Unreported univariate comparisons and logistic regression results

[9] This is similar to the finding of Heron and Lie (2004) that there is an average of 102 days from the filing date to the issue date for shelf offers during the 1980 to 1998 period.

[10] Firms that issue equity off a shelf multiple times, or firms that issue debt and then equity can bias the number of days upward for shelf offers. Excluding these observations results in a sample of 279 shelf equity offers with a slightly lower mean (median) of 179 (85) days to completion. Also, when the stated use of proceeds relates to a merger/acquisition, the time to completion for shelf offers is shorter but remains 2–3 times longer than for non-shelf offerings.

[11] We find little evidence that the growth in shelf offers over time is from unused proceeds from existing shelves being rolled over to new shelves. Only 227 of the 1437 shelf filings are rollovers.

Table 5
Descriptive statistics for certification proxies

Panel A: The sequence of offerings

	Non-shelf offers		Shelf offers		
	Mean	Percentage of offers (%)	Mean	Percentage of offers (%)	Mean *p*-value
First-time seasoned issuer	–	41 [75]	–	30 [25]	–
Second offer	–	33 [73]	–	28 [27]	–
Third or subsequent offer	–	26 [58]	–	42 [42]	–
Sequence	2.02	–	2.57	–	< 0.0001

Panel B: Stock returns prior to filing and offering

	Non-shelf offers		Shelf offers			
	Mean	Median	Mean	Median	Mean *p*-value	Median *p*-value
PREFILE180 (%)	67.67	38.67	40.55	18.75	< 0.0001	< 0.0001
PREOFFER180 (%)	60.60	30.84	39.80	22.79	0.0013	0.0002
PREOFFER360 (%)	123.23	50.32	78.91	29.19	0.0029	< 0.0001

Panel A displays statistics on the sequence of offers and Panel B reports pre-filing and pre-offer stock performance full sample (1990–2003) of shelf and non-shelf equity offers. The sample consists of 857 non-shelf and 386 shelf offers. SEQUENCE is the number of seasoned offers since the firm's IPO. The non-bracketed percentages represent the percentage of offers that are first-time issuers, second time issuers, etc. separately for each offer method; the bracketed percentages represent the percentage of first-time issuers, etc. that are shelf versus non-shelf. The statistics in the fourth row of Panel A indicate where in the sequence of offerings the average shelf and non-shelf offering takes place. A value of one represents the firm's first seasoned offering, a value of two represents its second offering, etc. The pre-filing runup (PREFILE180) is defined as the buy-and-hold return for 180 days ending two days before the filing date. The pre-offer runups (PREOFFER180, PREOFFER360) are the 180- and 360-day buy-and-hold return ending two days prior to the offer date for non-shelf offers, and ending two days prior to the pre-offer filing if available (otherwise the offer date) for shelf offers. All runup variables are net of the CRSP value-weighted market buy-and-hold return for the same period. The sample of 386 shelf offers are conducted from 341 different filings, thus PREFILE180 is calculated using only 341 observations. *p*-values for differences in means and medians are based on standard *t*-tests and Wilcoxon sign-rank tests, respectively.

suggest that the likelihood of a "shelf filing" culminating in an offer is significantly influenced by the 90-day post-filing stock performance.[12] We note, however, that a large number of these filings take place during 2000–2003, and therefore it is likely that some of them will have an offer in the future.[13] Nonetheless, a surprisingly large percentage of shelf filings are forgone in comparison to the percentage of non-shelf registrations that are cancelled. During our sample period, only 7% of non-shelf offers are cancelled, comparable to the 5% cancellation reported by Clarke, Dunbar, and Kahle (2001).

The value of shelf issuers' option to defer or abandon offers is increasing in volatility. Although non-shelf issuers have the option to cancel, it expires quickly and is exercised only if the favorable conditions under which the filing was made deteriorate in the relatively short interval before the offering. In contrast, shelf issuers' option to defer or abandon offerings expires after two years or longer and allows firms to make filings regardless of the current conditions and to complete offerings only if and when conditions become favorable and/or an uncertainty regarding the potential offer resolves favorably. The frequently used shelf deferral and abandonment option (which is relatively long-term in nature) is thus expected to be more valuable than the infrequently used non-shelf cancellation option (which is relatively short-

[12] The logistic regression estimates the likelihood of a shelf filing culminating in an offer as a function of the 90-day post-filing abnormal return and a set of variables controlling for issue and issuer characteristics. The coefficient of the 90-day post-filing performance is significant at the 5% level. We conjecture that better post-filing stock performance is associated with a favorable resolution of an uncertain investment opportunity, triggering a shelf takedown.

[13] This could impart a downward bias on our analysis of the number of days between filing and offering. This potential bias, however, does not affect our comparative analysis of completed shelf and non-shelf equity offerings.

term in nature) with the difference in value between these two options increasing with firm-specific residual volatility. Consistent with this expectation, we have reported in the previous section that the increasing use of shelf registration coincides with increasing residual volatility of the shelf issuers. In Section 3.3.3 we report that the logistic estimate of the likelihood of a firm's using shelf vs. non-shelf is positively associated with residual volatility.

3.3.2. Reduced need for certification

> "The financial markets are no longer knocking down the prices of companies that file shelf registrations, *a radical break from previous years,*….in the past, worries over stock price declines presented the only hurdle to doing shelf registrations."
>
> – Investment Dealer's Digest, "Punishment Eases for Shelfs: The Markets Have Stopped Rebuking Issuers that File Shelfs", July 16, 2001.

During 1990–2003 shelf offerings are increasingly associated with high firm-specific volatility. The combination of high volatility/uncertainty and under-certification inherent in shelf offerings would predict a severe market penalty. However, the above quote is consistent with a non-negative market perception of shelf offerings. In this section we examine whether firms are more likely to choose shelf offerings when the need for certification is reduced through other mechanisms, reducing the costs associated with shelf offerings and increasing its usage. We explore two possible mechanisms by which shelf issuers reduce the need for certification.

3.3.2.1. The sequence of offerings. One mechanism through which shelf users can reduce the need for certification is conducting shelf offers after the firm has been certified in prior seasoned offerings. D'Mello, Tawatnuntachai, and Yaman (2003) provide evidence that frequent seasoned equity issuers experience less negative announcement reactions to the third and subsequent SEOs suggesting that the certification obtained from earlier offerings reduces the negative impact of subsequent offering announcements. It is possible that shelf issuers reduce the need for certification, thereby mitigating the under-certification problem, by choosing shelf registration later in the sequence of offerings. We are able to obtain the number of seasoned offers since the firm's IPO from the SDC database for the shelf offers and shelf-eligible non-shelf offers in our sample. Panel A of Table 5 reports that first-time seasoned issuers represent 41% of our sample non-shelf offers, but only 30% of shelf offers. Further, issuers conducting their third or subsequent offer constitute only 26% of non-shelves, whereas they make up 42% of shelf offers.[14] Moreover, non-shelf issuers represent 75% of all first-time issuers. The fourth row of Panel A indicates the location in the sequence of financing for the average shelf and non-shelf offering. A value of one represents the firm's first seasoned offering, a value of two represents its second offering, etc. The mean sequence value is 2.57 and 2.02 for the typical shelf and non-shelf offer, respectively. The difference is statistically significant at the 1% level consistent with shelf offers occurring later in a firm's sequence of offerings.

3.3.2.2. Abnormal stock price runups. The need for certification is also reduced if firms choose the shelf procedure when their circumstances are such that there is a reduced market perception of firm overvaluation. In the Myers and Majluf (1984) adverse selection model, investors are at an informational disadvantage relative to managers and interpret equity issues as signals of firm overvaluation. Numerous studies (see, e.g., Asquith and Mullins, 1986, Masulis and Korwar, 1986, and Mikkelson and Partch, 1986) document a stock price decline at the announcement of seasoned equity offerings consistent with the adverse selection hypothesis. In the model of Lucas and McDonald (1990), the market reaction is less negative for issuing firms with lower pre-announcement price runup. The use of shelf registration after relatively smaller stock price runups might reduce the market perception that shelf filings or offerings represent opportunistic market timing, which would lessen the need for certification and could result in a smaller market penalty.

In Panel B of Table 5 we present the pre-file and the pre-offer runups for the shelf and non-shelf procedures. We calculate the pre-filing runup (PREFILE180) as the stock's buy-and-hold return for 180 days, ending two days before

[14] Unreported results show that shelf issuers that have had at least two prior seasoned equity offering are generally larger, make larger offers, have marginally higher debt ratios and lower volatility compared to shelf offers that represent the issuer's first or second seasoned offering.

Table 6
Logistic regression results for choice of registration procedure

Modeled: SHELF = 1		
	(1)	(2)
Intercept	−22.27	−19.40
	(346.3)	(26.51)
MARKVAL	0.9375***	1.196***
	(0.0919)	(0.1126)
FILESIZE	6.059***	9.092***
	(0.6009)	(0.8522)
DRATIO	0.6951*	0.4724
	(0.3631)	(0.4281)
MTB	0.0047	0.0048
	(0.0271)	(0.0310)
RVOL	20.04***	22.20***
	(6.52)	(7.79)
SEQUENCE	0.2166***	0.2185***
	(0.0668)	(0.0770)
PREFILE180	−0.4678***	−0.4438***
	(0.1191)	(0.1245)
Industry dummies	No	Yes
−2 log likelihood	869.1 (<0.0001)	717.0 (<0.0001)

Logistic regressions with a binary choice variable (SHELF) taking the value of one for shelf offers and zero for non-shelf offers. The sample period is 1990–2003 and the sample consists of 857 non-shelf offers and 386 shelf offers. MARKVAL is the natural log of the market value of equity (stock price multiplied by shares outstanding) two days prior to the filing. FILESIZE is the ratio of the dollar amount filed to the market value of shares outstanding two days prior to filing. DRATIO is the ratio of long-term debt to total book assets. MTB is the market value of equity plus book value of debt divided by total book assets. DRATIO and MTB are calculated at the end of the year prior to filing. RVOL is the residual volatility calculated from the Scholes and Williams (1977) market model estimation using a 200-day estimation period ending 20 days prior to the filing date. SEQUENCE equals the number of seasoned offers since the firm's IPO and is obtained from the Securities Data Corporation (SDC) new issues database. PREFILE180 is the 180-day buy-and-hold stock return ending two days before the filing date, net of the CRSP value-weighed market return for the same period. Filing year dummy variables are included in each specification.
*, **, *** indicate significantly different from zero at 10%, 5%, and 1% levels, respectively.

the filing date, minus the buy-and-hold return for the CRSP value-weighted index for the same period. The pre-offer runup (PREOFFER180 and PREOFFER360) is the 180- and 360-day market-adjusted buy-and-hold return ending two days prior to the offer date for non-shelf offers and two days before the earlier of pre-offer filing date or the offer date for shelf offers. Mean and median values of all three runup variables are significantly lower for shelf relative to non-shelf offerings. The median PREFILE180 is roughly twice as large for non-shelf as for shelf offers, although this is not surprising considering the longer time to completion for shelf offers. More convincing evidence is that the median PREOFFER360 is about 1.75 times larger for non-shelf offers.

The argument that shelf offers with lower price runup are less likely to be perceived as overvalued, relative to non-shelf offers, is consistent with Heron and Lie (2004). They investigate the operating performance around various types of equity issues and conclude that announcements of shelf-registered offers are less likely to be opportunistically timed than announcements of regular equity offerings.

3.3.3. Choice of registration method

Our analyses thus far would predict that firms are more likely to choose shelf registration if they (i) have high residual volatility associated with high option value to defer or abandon and (ii) have low pre-filing returns and issue shelf offers later in the financing sequence to mitigate the potential under-certification costs associated with the high volatility. Table 6 reports logistic estimates of the choice of registration method. Each model includes issuer size measured as the log of the market value of equity (MARKVAL), the relative filing size (FILESIZE), the debt ratio (DRATIO), market-to-book (MTB) and a year dummy as control variables in addition to the primary variables, issuer residual volatility (RVOL), the number of seasoned offers since the firm's IPO (SEQUENCE), and the pre-filing runup (PREFILE180). Model 2 also includes industry dummies based on the Fama-French 48 classification.

The choice of shelf registration is positively related to firm size and the relative filing size, and appears to be weakly associated with the debt ratio although this effect is eliminated when we include industry dummies. After we control for

these factors, the estimates in Table 6 indicate that shelf offers are *positively* associated with residual stock volatility at the 1% level of significance. This finding is a significant reversal from the 1980s, for which Denis (1991) and Blackwell, Marr and Spivey (1990) report an inverse relation between the choice of shelf registration and residual volatility. Moreover, we find that firms are more likely to choose shelf registration later in the sequence of offers and when they have lower pre-filing abnormal stock returns. Overall, the regression results are consistent with a preference for shelf registration by firms with higher residual volatility/option value which have been at least partly certified in prior offerings and are less likely to be perceived as overvalued by the market.[15]

In the next section we examine whether the costs of shelf filings and offerings are consistent with our argument that recently shelf issuers have indeed mitigated the under-certification problem presented in the literature as the primary reason for the demise of shelf offers in the mid-1980s.

4. Cost analyses

In this section we examine the market penalties and underwriter fees associated with shelf and non-shelf offerings.

4.1. Market penalties

An early study by Moore, Peterson and Peterson (1986) reported no significant differences in the market reaction to the announcements of shelf and non-shelf registration in the 1980s. However, Denis (1991) reports that after controlling for firm characteristics/selection biases, the market penalty in the 1980s was greater for shelf relative to traditional offer announcements because of the greater under-certification problem associated with shelf offers. We re-examine the cost comparison to test the argument that changes in how shelf offers are used in our sample period have reduced their certification needs.

4.1.1. Market reaction at filing: univariate analysis

Panel A of Table 7 reports market-adjusted cumulative abnormal returns in the three-day window centered on the filing date (FILECAR).[16] For the full sample (row 1), the mean and median FILECAR of shelf offers (−0.30% and −0.61%) are significantly less negative than those of non-shelf offers (−1.61% and −2.01%) at the 1% level. To control for possible selection bias we also compare (in row 4) the relative values of FILECAR for a sub-sample of firms that offer both shelf and non-shelf equity. This sample includes 138 shelf filings and 113 non-shelf filings during 1990–2003. The results are qualitatively similar to those using the full sample.[17]

4.1.2. Total market reaction: univariate analysis

The significantly lower market penalty on the filing date for shelf offers, relative to non-shelf offers, is in contrast to the significantly higher penalty reported by Denis (1991) after correcting for any sample selection biases. It is likely, however, that the market response on just the *filing date* understates the true price discount as the market incorporates the probability of a subsequent offer into its reaction. Such understatement is likely to be larger in our later sample period with shelf filers increasingly deferring shelf offerings. Recognizing that the remainder of the price discount takes place when the market becomes aware of the equity take down, we also compare (i) the filing reaction (FILECAR) of non-shelf offers to the sum of (FILERCAR) and (PREOFFCAR) of shelf offers, where (PREOFFCAR) is the market-adjusted cumulative abnormal returns in the three-day window centered on the *pre-offer filing date*, and (ii) (FILECAR)+(OFFERCAR) of non-shelf offers to the sum of (FILECAR), (PREOFFCAR), and (OFFERCAR) of shelf offers, where (OFFERCAR) is the market-adjusted cumulative abnormal returns in the three-day window centered on the actual *offer date*. Comparison (i) above captures the pure information impact on price discounts but reduces our sample of shelf offers from 386 to 191 for which we were able to identify a pre-offer filing. Comparison (ii) includes all event dates, allowing us to work with the full sample

[15] Probit regressions yield qualitatively similar results.

[16] The results are qualitatively similar when the FILECAR measure is based on the market model and the Scholes and Williams (1977) market model.

[17] If shelf issuers are more likely to forego offers after a large negative market reaction, a survivorship bias could result in which the shelf filings that culminate in equity offers are those with the least unfavorable market reaction. However, a comparison of market penalties for shelf filings that lead to equity offerings and those that do not reveal no significant differences, suggesting no significant bias.

Table 7
Market penalty at filing, pre-offer filing and offering

	Non-shelf			Shelf			Difference	
	Number	Mean	Median	Number	Mean	Median	Mean	Median
							p-value	*p*-value
Panel A								
Full sample								
FILECAR	857	−1.61***	−2.01***	341	−0.30	−0.61***	0.0036	0.0005
FILECAR+PREOFFCAR	857	−1.61***	−2.01***	191	−1.10	−1.37**	0.5866	0.5479
FILECAR+PREOFFCAR+OFFERCAR	857	−2.75***	−2.78***	386	−2.41***	−1.98***	0.6459	0.4322
Firms using both procedures								
FILECAR	113	−1.01*	−1.84**	138	0.28	0.13	0.1214	0.0312
FILECAR+PREOFFCAR	113	−1.01*	−1.84**	87	−0.56	0.20	0.7324	0.2951
FILECAR+PREOFFCAR+OFFERCAR	113	−2.06**	−1.94**	159	−1.33	−0.88	0.5573	0.3718
Panel B								
FILECAR								
SEQUENCE=1 and PREFILE180 (top third)	141	−1.02	−2.30**	27	−3.21**	−3.60**	0.2295	0.3961
SEQUENCE>=3 and PREFILE180 (bottom third)	63	−1.58**	−1.77***	67	−0.32	−0.12	0.1748	0.0190
p-value of difference	–	0.5707	0.7937	–	0.0838	0.0656		
FILECAR+PREOFFCAR								
SEQUENCE=1 and PREFILE180 (top third)	139	−1.08	−2.33**	12	−1.77	−3.32	0.8920	0.4123
SEQUENCE>=3 and PREFILE180 (bottom third)	68	−1.42**	−1.70***	48	−1.46	−0.46	0.9827	0.3584
p-value of difference	–	0.7238	0.5865	–	0.9521	0.3640		
FILECAR+PREOFFCAR+OFFERCAR								
SEQUENCE=1 and PREFILE180 (top third)	142	−3.99***	−3.78***	29	−6.47**	−3.44**	0.3826	0.5045
SEQUENCE>=3 and PREFILE180 (bottom third)	63	−3.16***	−2.99***	79	−2.29*	−1.47	0.5713	0.2095
p-value of difference	–	0.5719	0.6383	–	0.2145	0.1771		

Market penalty at filing (FILECAR) is defined as the market-adjusted cumulative abnormal return over the three-day event window centered on the filing date. A pre-offer filing is identified for 191 of our sample 386 shelf offers. The market penalty at the pre-offer filing (PREOFFCAR) is the market-adjusted cumulative abnormal return over the three-day event window centered on pre-offer filing date. The reaction at the offering (OFFERCAR) is the market-adjusted cumulative abnormal return over the three-day event window centered on the offer date. The sample period is 1990–2003. Panel A reports market penalties for the full sample and for the sub-sample of firms that offer both shelf and non-shelf equity. Statistics on FILECAR include all sample non-shelf and shelf filings; statistics on FILECAR+PREOFFCAR include all non-shelf offers (for non-shelf, PREOFFCAR=0) but includes only the shelf offers that have pre-offer filings; and statistics on FILECAR+PREOFFCAR+OFFERCAR include all sample offerings (PREOFFCAR=0 for all non-shelf offers and for shelf offers without pre-offer filings). Panel B reports market penalties within groups of SEQUENCE and PREFILE180. SEQUENCE equals the number of seasoned offers since the firm's IPO and is obtained from the Securities Data Corporation (SDC) new issues database. PREFILE180 is defined as the buy-and-hold return for 180 ending two days before the filing date, and is net of the CRSP value-weighted market buy-and-hold return over the same period. The top and bottom third of PREFILE180 are formed using the entire sample of shelf and non-shelf offerings. *p*-values for differences in means and medians are based on standard *t*-tests and Wilcoxon sign-rank tests, respectively.
*, **, *** indicate significantly different from zero at 10%, 5%, and 1% levels, respectively.

of shelf offers, but also adding offer date price pressure effects to the information impact. Consistent with the argument that the small filing date reaction of shelf offers incorporates the high probability of no subsequent offer, we report in Panel A of Table 7 that when total market reactions are compared there is no significant difference in market penalties of shelf and non-shelf offers. The finding of comparable market penalties holds for the total sample and for the selection bias free sub-sample of firms that offer both shelf and non-shelf equity.

The results in Panel A of Table 7 suggest that shelf issuers in our sample period are less subject to an under-certification penalty than in the 1980s, on average. In Panel B of Table 7 we present preliminary evidence on the cross sectional variation in the market reaction, measured as (FILECAR), (FILECAR+PREOFFCAR) and (FILECAR+PREOFFCAR+OFFERCAR), as a function of variables that proxy for the alternative mechanisms that reduce the need for certification, viz., location in the sequence of offerings and pre-filing runup. The "pre-certified" group comprises offers that represent the issuer's third or subsequent offering and are in the bottom third of PREFILE180 for the total sample of shelf and non-shelf filings. Offerings that are "less certified" represent the issuer's first seasoned offering and are in the top third of PREFILE180. When the market penalty is defined as (FILECAR+PREOFFCAR), capturing information effects only, we observe that shelf offers constitute 41% (48 of 116) of the pre-certified group and only 8%

(12 of 151) of the less certified group. The ratio of shelf offers in the pre-certified group to offers in the less certified group is 4.0 compared to 0.5 for non-shelf filings. The evidence is consistent with equity issuers using shelf registration when their certification needs are low. From row 2, the median market penalty for shelf filings in the more certified group is −0.46%, insignificantly different from zero. However, shelf filers in the less certified group incur a much larger median market penalty of −3.32% which appears to be economically significant but is not statistically so, arguably because of the small sub-group sample size of 12. The corresponding median market penalty for non-shelf filings is less negative at −2.33%, but the difference is not statistically significant. The finding of higher market penalties for shelf issuers that are less certified suggests a possible reason for continuing (albeit diminishing) use of traditional registration. Issuers that are less certified through alternative mechanisms may have a preference for traditional registration and its associated greater opportunity for due diligence/certification by investment bankers.[18] Our conclusions are qualitatively similar for the two other measures of market penalty and do not change when we include alternative proxies for certification.[19]

4.1.3. Market penalty: multivariate analysis

In Table 8 we expand the cross sectional analysis by estimating OLS regressions to test the association between market penalty and the choice of registration, after controlling for firm- and offer-specific variables. We specify two models for each measure of the market reaction/penalty. In model 1, we regress the market reaction against the filing size scaled by the market value two days prior to filing (FILESIZE), the firm's residual volatility (RVOL), the pre-filing runup (PREFILE180), firm-specific control variables (MARKVAL, MTB, and DRATIO), a variable (SEQUENCE) reflecting the number of seasoned offers since the firm's IPO, and a dummy variable (SHELF) equal to one for shelves and zero for non-shelves. In model 2, we add interaction variables of SHELF * FILESIZE, SHELF * PREFILE180 and SHELF * RVOL, following Denis (1991), to gain insights into the differential impact of these variables across registration methods. A year dummy is included in all the specifications.

We report a significantly positive coefficient for SHELF in three out of the six regressions after controlling for firm and offer characteristics. We conservatively conclude that the market penalty for shelf offers is no larger than for non-shelf offers. The coefficient of the SEQUENCE variable is significantly positive in four out of the six regressions, consistent with a lower market penalty for offers made later in the sequence. It is noteworthy that the coefficient of the interaction term SHELF * RVOL is insignificantly different from zero compared to a significantly negative coefficient reported by Denis (1991) in a similar model specification. This result is consistent with the under-certification problem faced by shelf offers in the 1980s and mitigated in our sample period as discussed earlier. The coefficients of PREFILE180 and SHELF * PREFILE180 are insignificant for the full sample suggesting that non-shelf offers that have higher PREFILE180 and hence a greater derived demand for certification are underwriter certified, while shelf offers are certified by alternative mechanisms. The coefficient of SHELF * FILESIZE captures differences in price pressure and liquidity costs. The fact that shelf issuers make larger filings relative to firm size predicts a negative coefficient. However, we report an insignificant coefficient indicating no price pressure differential.[20]

4.2. Direct costs

The arguments in the literature in support of the proposition that Rule 415 has reduced the direct cost of issuance for shelf registration are: (i) potentially greater competition among investment bankers to underwrite shelf issues, and (ii) greater incidence of zero/low fee, non-syndicated direct placement of shelf offers relative to traditional offers. The main argument against finding lower direct costs for shelf offers is under-certification of shelf offers from erosion of due

[18] The off-diagonals indicate that 6% of shelf offers (12 of 191) are made when certification needs are high, and 8% of non-shelf offers (68 of 857) occur when certification needs are low. We conjecture that a few shelf filers might be forecasting a possible need for a quick cash infusion at some later point in time and thus place high value on the deferral option, and that some non-shelf issuers are persuaded by the potential benefits of added book-building/road show.

[19] When we replace the SEQUENCE variable with (i) institutional holdings or (ii) analyst following as alternative proxies for information asymmetry/certification needs, the results are qualitatively similar. We also check for differences in underwriter (quality) rankings and find that shelf issuers use slightly more reputable underwriters. The mean underwriter rank based on Loughran and Ritter (2004) is 8.39 for shelf issuers and 8.20 for non-shelf issuers. While it is possible that shelf issuers can reduce their certification needs by funding certain types of projects, we find no evidence of significant differences in the use of proceeds by shelf and non-shelf issuers.

[20] We confirm our OLS results adding industry dummy variables and using quantile median regression analysis (Koenker and Bassett, 1978).

Table 8
Determinants of the market reaction to equity offers

	FILECAR	FILECAR	FILECAR+ PREOFFCAR	FILECAR+ PREOFFCAR	FILECAR+PREOFFCAR+ OFFERCAR	FILECAR+ PREOFFCAR+ OFFERCAR
	(1)	(2)	(1a)	(2a)	(1b)	(2b)
Intercept	0.0089	0.0051	0.0150	0.0087	−0.0223	−0.0228
	(0.0175)	(0.0180)	(0.0231)	(0.0234)	(0.0306)	(0.0301)
FILESIZE	−0.0028	0.0121	0.0012	0.0099	−0.0042	−0.0041
	(0.0057)	(0.0114)	(0.0076)	(0.0105)	(0.0101)	(0.0106)
MARKVAL	−0.0026	−0.0025	−0.0025	−0.0020	0.0005	0.0006
	(0.0018)	(0.0019)	(0.0026)	(0.0026)	(0.0032)	(0.0031)
MTB	0.0010	0.0010	0.0000	0.0001	0.0008	0.0008
	(0.0009)	(0.0009)	(0.0008)	(0.0008)	(0.0012)	(0.0012)
DRATIO	−0.0106	−0.0091	−0.0087	−0.0119	−0.0248*	−0.0248*
	(0.0083)	(0.0084)	(0.0103)	(0.0112)	(0.0135)	(0.0141)
RVOL	−0.4182**	−0.3913*	−0.5670**	−0.3976	−0.7341**	−0.7131**
	(0.2132)	(0.2429)	(0.2492)	(0.2636)	(0.3189)	(0.3434)
PREFILE180	−0.0013	−0.0003	0.0015	−0.0020	0.0004	0.0002
	(0.0037)	(0.0048)	(0.0046)	(0.0047)	(0.0050)	(0.0057)
SEQUENCE	0.0023*	0.0024*	0.0007	0.0008	0.0047**	0.0047**
	(0.0013)	(0.0013)	(0.0017)	(0.0017)	(0.0020)	(0.0020)
SHELF	0.0122**	0.0210*	0.0059	0.0277*	0.0009	0.0026
	(0.0053)	(0.0118)	(0.0124)	(0.0170)	(0.0096)	(0.0182)
SHELF∗FILESIZE		−0.0197		−0.0101		−0.0002
		(0.0132)		(0.0141)		(0.0154)
SHELF∗PREFILE180		−0.0037		0.0250**		0.0006
		(0.0072)		(0.0110)		(0.0119)
SHELF∗RVOL		−0.0570		−0.8604		−0.0495
		(0.4050)		(0.5941)		(0.5907)
Adj *R*-Sq	0.0052	0.0050	0.0008	0.0070	0.0012	−0.0010

OLS regressions explaining the market reaction to equity filings. The sample period is 1990–2003 and the sample consists of 857 non-shelf and 386 shelf offerings. Models (1) and (2) explain the filing reaction (FILECAR) using the full sample. Models (1a) and (2a) explain the sum of FILECAR and the pre-offer filing (PREOFFCAR) using the full sample of non-shelf offers (for non-shelf, PREOFFCAR=0) and using only the shelf offers that have pre-offer filings (n=191). Models (1b) and (2b) explain the sum of FILECAR+PREOFFCAR+OFFERCAR, using all sample offerings (PREOFFCAR=0 for all non-shelf offers and for shelf offers without pre-offer filings). FILECAR is the market-adjusted cumulative abnormal returns over the three-day event window centered on the filing date. PREOFFCAR is the market-adjusted cumulative abnormal returns over the three-day event window centered on pre-offer filing date. OFFERCAR is the market-adjusted cumulative abnormal return over the three-day event window centered on the offer date. The filing size (FILESIZE) is the ratio of the dollar amount filed to the market value of shares outstanding two days prior to filing. MARKVAL is the natural log of the market value of equity (stock price multiplied by shares outstanding) two days prior to the filing. DRATIO is the ratio of long-term debt to total book assets. MTB is the market value of equity plus book value of debt divided by total book assets. DRATIO and MTB are calculated at the end of the year prior to filing. RVOL is the residual volatility calculated from the Scholes and Williams (1977) market model using a 200-day estimation period ending 20 days prior to the filing date. PREFILE180 is the 180-day buy-and-hold stock return ending two days before the filing date, net of the CRSP value-weighed market return for the same period. SHELF takes the value of one for shelf-registered offers and zero for non-shelf offers. SEQUENCE equals the number of seasoned offers since the firm's IPO and is obtained from the Securities Data Corporation (SDC) new issues database. Filing year dummy variables are included in each specification. Heteroskedasticity-adjusted standard errors based on White's (1980) procedure are in parentheses.
*, **, *** indicate significantly different from zero at 10%, 5%, and 1% levels, respectively.

diligence opportunity. It is suggested that underwriters demand higher compensation for under-certified issues as a premium for protection against litigation risk and loss of reputation.

The net effect of these opposing influences on the issuance costs of shelf offers is an empirical question. However, the evidence in the literature on the relative direct costs of shelf and non-shelf procedure during the 1980s is mixed. Bhagat, Marr, and Thompson (1985) report significantly lower costs for shelf offers, more so for non-syndicated issues than for syndicated issues. Blackwell, Marr, and Spivey (1990) find evidence of a higher fee premium for higher volatility firms with higher expected due diligence liability, but a cost differential in favor shelf offers, on average. Denis (1993), however, reports that after excluding non-syndicated shelf offers that have zero underwriter fees and

Table 9
Direct costs of shelf and non-shelf offers

	Non-shelf offers		Shelf offers			
	Mean	Median	Mean	Median	Mean	Median
					p-value	*p*-value
Panel A: Full sample						
PDIRCOSTS (%)	5.09	5.22	3.99	4.41	< 0.0001	< 0.0001
Number of observations	857	857	386	386		
Panel B: Firms that conduct both shelf and non-shelf offers						
PDIRCOSTS (%)	4.89	5.05	4.14	4.49	< 0.0001	< 0.0001
Number of observations	113	113	159	159		

Direct costs during 1990–2003 for the full sample (Panel A) and for the sample of issuers that conduct both shelf and non-shelf offers (Panel B). Direct costs include the gross underwriter spread (management fee, underwriter fee, and selling concession) and expenses paid by the issuer (legal, miscellaneous, and printing fees). PDIRCOSTS is calculated by taking the ratio of the direct costs to the total proceeds of the offer. *p*-values for differences in means and medians are based on standard *t*-tests and Wilcoxon sign-rank tests, respectively.

controlling for self selection bias there is no issuance cost advantage for shelf offers, suggesting that the pros and cons of shelf offers vis-à-vis direct costs offset one another.

In this section we re-examine the direct cost comparison to test the proposition that issuance costs are now lower for shelf offers because the under-certification problem, the primary disadvantage associated with the shelf procedure, is reduced through other mechanisms in our sample period.

Following Lee et al. (1996) we define direct costs as the sum of gross underwriter spread (management fee, underwriter fee, and selling concession) and expenses paid by the issuer (legal, miscellaneous, and printing fees), scaled by offer proceeds (PDIRCOSTS). The gross underwriter spread constitutes 95% or more of PDIRCOSTS making the variable comparable to previous studies' use of underwriter spread in analyzing direct costs.

Panel A of Table 9 reports that for the total sample the mean and median PDIRCOSTS for shelf offers (3.99% and 4.41%) are indeed significantly lower than those for non-shelf offers (5.09% and 5.22%) at the 1% level of significance. The results are similar when we mitigate a possible self selection bias by restricting the sample to offers conducted by firms that use both procedures.[21] Panel B reports that for this sub-sample also the mean and median PDIRCOSTS for shelf offers (4.14% and 4.49%) are significantly lower at the 1% level than for non-shelf offers (4.89% and 5.05%).

We further expand the direct cost comparison analysis by controlling for issue and firm characteristics in a regression framework. The regression estimates of model (1) in Table 10 indicate that, consistent with prior studies, smaller offerings and offerings by firms with more uncertainty are associated with greater direct costs. We also find that underwriters charge less for firms with greater equity market experience (SEQUENCE). After controlling for these variables, the coefficient of SHELF is significantly negative at the 1% level. In model (2) we add the interaction variables of SHELF with offer size and residual volatility. The coefficient of SHELF * PROCEEDS suggests a weakened relation between offer size and underwriter fees for shelf offerings, possibly due to diminishing economies of scale in underwriter fees. The interaction term SHELF * RVOL, however, is insignificant suggesting that shelf issuers with greater uncertainty do not incur higher underwriter fees. This is consistent with the finding that higher uncertainty shelf issuers are not significantly penalized by the market (see Table 8). In model (3) we add a dummy variable equal to one for syndicated offers and find its coefficient to be significantly positive as expected. However, even after controlling for syndication there is a cost advantage for shelf offers consistent with our univariate analysis. Using the coefficients of model (3) and the mean values of the independent variables we estimate a marginal saving of 0.82% of the shelf offer, comparable to the 0.75–1.1% range of mean differentials reported in the univariate comparison in Table 9. All the model specifications include a year dummy, and adding industry dummies or using quantile median regression does not qualitatively change the results.

[21] In unreported results we find a significantly higher incidence of lower fee non-syndicated shelf offers, relative to non-shelf offers. However, comparisons within the syndicated and non-syndicated sub-groups show a lower direct cost for shelf offers in each group, consistent with Bhagat, Marr and Thompson (1985).

Table 10
Determinants of the direct costs of equity offers

Dependent variable: PDIRCOSTS			
	(1)	(2)	(3)
Intercept	0.0657***	0.0664***	0.0643***
	(0.0028)	(0.0030)	(0.0030)
PROCEEDS	−0.0058***	−0.0061***	−0.0066***
	(0.0004)	(0.0005)	(0.0005)
RVOL	0.1536***	0.1796***	0.1799***
	(0.0364)	(0.0328)	(0.0320)
SEQUENCE	−0.0010***	−0.0010***	−0.0009***
	(0.0002)	(0.0002)	(0.0002)
PREFILE180	0.0001	0.0001	0.0001
	(0.0005)	(0.0005)	(0.0005)
SHELF	−0.0089***	−0.0104*	−0.0105*
	(0.0010)	(0.0058)	(0.0056)
SHELF * PROCEEDS	–	0.0008*	0.0010*
		(0.0010)	(0.0009)
SHELF * RVOL	–	−0.0603	−0.0561
		(0.0662)	(0.0640)
SYNDICATE	–	–	0.0065***
			(0.0006)
Adj *R*-Sq	0.3770	0.3780	0.4203

Regressions with PDIRCOSTS as the dependent variable over the sample period 1990–2003. The sample consists of 857 non-shelf offers and 386 shelf offers. PDIRCOSTS is the ratio of the direct costs to the total proceeds of the offer. Direct costs include the gross underwriter spread (management fee, underwriter fee, and selling concession) and expenses paid by the issuer (legal, miscellaneous, and printing fees). The offer proceeds (PROCEEDS) are defined as the natural logarithm of offer proceeds. RVOL is the residual volatility calculated from the Scholes and Williams (1977) market model using a 200-day estimation period ending 20 days prior to the filing date. SEQUENCE equals the number of seasoned offers since the firm's IPO and is obtained from the Securities Data Corporation (SDC) new issues database. PREFILE180 is the 180-day buy-and-hold stock return ending two days before the filing date, net of the CRSP value-weighed market return for the same period SHELF takes the value of one for shelf-registered offers and zero for non-shelf offers. SYNDICATE takes the value of one for syndicated offers and zero for non-syndicated offers. Filing year dummy variables are included in each specification. Heteroskedasticity-adjusted standard errors based on White's (1980) procedure are in parentheses.
*, **, *** indicate significantly different from zero at 10%, 5%, and 1% levels, respectively.

Overall, our analysis of the comparative costs of shelf and non-shelf offers suggests a cost advantage for shelf-registered offers during 1990–2003 with comparable market penalties and lower direct costs, consistent primarily with shelf issuers having a reduced need for certification.[22]

5. Advantages of universal shelf offers

> "Similar to many other public companies, we are utilizing a universal shelf registration statement because it is a practical and efficient way to access the public markets. While we currently have no specific plans to sell securities, the shelf registration positions us to act quickly to take advantage of growth opportunities and favorable market conditions."
>
> – Robert C. Lamb, Jr., Executive Vice President and Chief Financial Officer, KPMG Consulting, March 7, 2002, after filing a $1 billion universal shelf registration for the possible future issuance of debt, preferred stock, common stock, and warrants.

In this section we examine how firms use the unallocated or "universal" shelf procedure, adopted by the SEC in October 1992 (SEC release no. 33-6964). The universal shelf rule allows firms to register a dollar amount of various

[22] We also note that costs reported for shelf offers represent an upper bound because compared to non-existent multiple filings in the 1980s, about 12% of shelf issuers make multiple offers under a single filing reducing the costs on a per offer basis in our sample period.

Table 11
Stock returns and interest rates prior to universal equity and debt offers

	Universal equity offers		Universal debt offers			
	Mean	Median	Mean	Median	Mean	Median
					p-value	*p*-value
PREOFFER30	0.0679***	0.0474***	0.0207***	0.0104***	0.0001	< 0.0001
PREOFFER60	0.1182***	0.0746***	0.0323***	0.0136***	< 0.0001	< 0.0001
LOGRATEDIFF	−0.0219***	−0.0101***	−0.0281***	−0.0228***	0.2209	0.0296
Number of observations	327	327	820	820		

Pre-offer runup (PREOFFER30 and PREOFFER60) is the 30- and 60-day buy-and-hold return ending two days prior to the pre-offer filing if available (otherwise the offer date). Each of the offer runup variables is truncated at two days after the filing date to avoid contamination. The runup variables are net of the CRSP value-weighted market buy-and-hold return for the same period. LOGRATEDIFF is the natural logarithm of the ratio of one plus the interest rate on the offer date divided by one plus the interest rate on the filing date. Interest rates are Moody's long-term corporate bond rates. *p*-values for differences in means and medians are based on standard *t*-tests and Wilcoxon sign-rank tests, respectively.
*, **, *** indicate significantly different from zero at 10%, 5%, and 1% levels, respectively.

classes of securities (including both debt and equity) without disclosing which securities it will offer in the future. Effectively, the rule allows firms to defer the decision of which security to issue until the actual offering. With a universal shelf, when a firm has need for capital it can, on short notice, choose to issue in the debt or equity market depending on which of these markets is more receptive to an offer at that time. This flexibility arguably provides added impetus to the use of shelf offerings.

Our sample contains 1094 universal shelf filings made by 721 different firms. From these filings, there have been 327 equity offers (representing 85% of the 386 total shelf equity offers in our sample) and 820 debt offers made by a total of 380 different firms. Thus, approximately only 53% of firms that make a universal shelf filing (380 out of 721 firms) use the filing to issue either debt or equity. More specifically, about 34% of universal filers (242 out of 721) issue equity, and about 29% (211 out of 721) issue debt. Roughly 10% of firms filing universal shelves (73 out of 721) use the filing to issue both debt and equity. The typical debt offering off a universal shelf filing has a face value of $263 million and a maturity of 10 years (roughly one-quarter are medium-term notes). They are made by firms that are larger and have lower market-to-book and debt ratios, relative to the typical firm that takes equity off a universal shelf filing.

We test whether universal issuers choose between debt and equity offers based on prevailing market conditions in the debt and equity market. Specifically, we compare the 30- and 60-day pre-offer stock returns and the interest rate changes from the filing date to the offer date of universal equity offerings with those of universal debt offerings. The pre-offer stock price runup (PREOFFER30 and PREOFFER60) is the 30- and 60-day market-adjusted buy-and-hold return ending two days prior to earlier of the pre-offer filing date and the offer date. Each pre-offer runup variable is truncated at two days after the filing date to avoid contamination. We calculate interest rate changes as the natural logarithm of the ratio of one plus the interest rate on the offer date divided by one plus the interest rate on the filing date (LOGRATEDIFF). Interest rates are Moody's long-term corporate bond rates.

The results reported in Table 11, based on a sample of universal equity offers (327) and debt offers (820), indicate that PREOFFER30 and PREOFFER60 are significantly larger for universal equity offers, and the percentage change in interest rates from the filing to offer date (LOGRATEDIFF) is more negative for universal debt offers. These findings suggest that, on average, universal issuers choose stock offerings when equity market conditions are more favorable, and they choose bond offerings when debt market conditions are more favorable. The results are consistent with the survey results of Graham and Harvey (2001) that firms care about interest rates and recent stock returns in making their security issuance decisions.

The additional flexibility provided by the universal shelf rule is further reason for the growing popularity of shelf registration. Universal shelf issuers have the options to defer offers, to defer the choice between debt and equity, and to abandon the offer completely, each of which they frequently use.

6. Conclusions

The demise of shelf equity offers in the mid-1980s has been followed by a significant revival since 1990. Over the recent five years, 1999–2003, almost half of all primary equity offerings were shelf-registered and total proceeds of

shelf offerings exceeded proceeds of traditional offerings. We attribute the growth in the use of shelf equity offers primarily to the significant changes in how firms use shelf offers now compared to the early 1980s. In the early 1980s shelf issuers, like non-shelf issuers, typically offered all shelf-registered shares in a single offering within one week of registration. During 1990–2003, however, shelf issuers routinely use the option to defer the offer by months or years, or to abandon it. Consistent with the value of the shelf deferral option increasing in firm-specific volatility, we report that the probability of firms' choosing shelf registration over the traditional offering method is an increasing function of this variable. This finding is a reversal of the negative association documented for the 1980s by Denis (1991) who hypothesized that high volatility firms are less likely to use the shelf procedure because of the under-certification problem from reduced opportunity for due diligence associated with shelf offers. In fact, the literature generally attributes the demise of shelf equity offers in the mid-1980s to the under-certification problem.

The combination of high volatility and the inherent under-certification in shelf offers should result in a severe market penalty, *ceteris paribus*, suggesting that the option value may come at too high a price. Our evidence suggests that the typical shelf issuer mitigates the under-certification problem by using shelf offers at times when there is less need for underwriter certification. In particular, firms typically favor shelf offerings after having already been certified in prior seasoned offerings and after lower abnormal stock price runups, relative to non-shelf offerings, which reduces the likelihood that the market will perceive the shares to be overvalued. We report that the market reaction to shelf offers is now not more negative than for non-shelf offers, on average. However, the market penalty is severe for shelf offering firms that are less certified by these alternative mechanisms, providing a possible explanation for the continuing, though diminishing use of traditional equity offers.

Since the circumstances under which firms typically choose shelf offerings are associated with a reduced need for certification, we reasonably expect that underwriters can charge lower fees due to a lessened need for an intensive due diligence investigation. Our evidence indicates that indeed shelf issuers incur lower underwriter fees than non-shelf issuers, on average.

The advent of the universal shelf filing rule provides added impetus for shelf use by providing the issuer the added flexibility of issuing debt or equity under a single filing. We report evidence consistent with universal shelf issuers choosing equity or debt depending upon which market conditions become more favorable.

Overall, we conclude that shelf use has grown rapidly in recent years because issuers now value and use the options to defer and to choose between debt and equity while managing to reduce the overall costs of issuance by reducing potential under-certification problems through alternative certification mechanisms. Our findings are important considering that the economic magnitude (and annual number) of shelf offers has recently surpassed that of the more studied traditional SEOs. In the light of a recent SEC regulation intended to further streamline the shelf offering process for well-known seasoned issuers,[23] the trend to shelf use is likely to be a topic of continuing interest.

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[23] For details, see SEC release 2005-99 at www.sec.gov/news/press/2005-99.htm.

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