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ORIGINAL RESEARCH

Firm growth and the pricing of discretionary accruals

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Abstract This paper examines how firm growth conditions the pricing of discretionary accruals. Given the rich growth opportunities and high information asymmetry in high-growth firms, we expect that managers have incentives to use discretionary accruals, especially income increasing (positive) discretionary accruals, to signal favorable private information to external investors. Our empirical tests reveal that overall there is no significant difference in the pricing of discretionary accruals between high-growth and low-growth firms. However, consistent with our expectations, we find that in high-growth firms compared to low-growth firms, *positive* discretionary accruals are priced to a greater extent, while negative discretionary accruals are priced to a smaller extent. Additional tests show that positive discretionary accruals have a relatively greater association with future firm performance in high-growth firms. Finally, we find that the pricing of positive discretionary accruals in high-growth firms is predominantly in those firms with high levels of information asymmetry.

Keywords Discretionary accruals · Firm growth · Valuation · Capital markets · Information asymmetry · Signaling

JEL Classification M41 · G14 · G32

1 Introduction

The role of discretionary accruals in market valuation and contracting continues to attract considerable interest in the accounting literature. Although most studies of discretionary

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accruals focus on their negative role[1] (opportunistic earnings management), some focus on their positive effect (performance signaling). In light of the many ways in which managers use discretionary accruals, Guay et al. (1996) suggest that researchers take managers' incentives into account when selecting samples to identify and study the role of discretionary accruals. However, few studies directly examine scenarios where managers have strong incentives to signal their private information to outside investors.[2] In this paper, we contribute by examining one such scenario, when a firm is growing. Specifically, we examine whether firm growth plays a role in the pricing of discretionary accruals.

The pricing of accruals is a fundamental issue in accounting: the very relevance of earnings (and accounting information) is itself questioned if accruals do not signal future performance or correlate with prices. A series of important papers establish the following sequence of results: that earnings are correlated with stock prices (Ball and Brown 1968), that earnings are more correlated with stock prices than cash flows (Dechow 1994), and that discretionary accruals are correlated with stock prices (Subramanyam 1996). Indeed, Guay et al. (1996, p. 104) note: "… Given that managerial discretion over accruals has survived for centuries, our prior is that the net effect of discretionary accruals in the population is to enhance earnings as a performance measure…" Our study evaluates the differential effect of discretionary accruals in high-growth firms.

High-growth firms—firms growing their revenues and earnings at high rates and enjoying rich investment opportunities—have characteristics that arguably increase managerial incentives to use accruals in signaling. The prior literature, for instance, identifies problems of information asymmetry and agency costs in high-growth firms (e.g., Core 2001; Chang et al. 2007; Koussis and Makrominas 2013).[3] These problems could be mitigated by increasing the flow of corporate information (e.g., Jones et al. 2000; Bae and Jo 2007). Thus, a greater role is indicated for discretionary accruals in high-growth firms. Additionally, Dechow (1994) argues that in firms that are not in a steady state (arguably high-growth firms fit the criterion), cash flows have timing problems and accruals have a potentially larger role in signaling performance. Because of these considerations, we argue that signaling with discretionary accruals is more important in high-growth firms.

Managers of high-growth firms could convey their private information directly through mechanisms such as press releases and conference calls, or indirectly through discretionary accruals. However, prior studies suggest that managers are reluctant to choose explicit mechanisms for making optimistic projections because of litigation risk (e.g., Skinner 1997; Baginski et al. 2002), agency costs (Berger and Hann 2007) or proprietary costs (e.g., Verrecchia 1983; Berger and Hann 2007).[4] Thus, we conjecture that managers of high-growth firms have relatively greater incentives to use less-explicit and subtler

[1] For a review of the earnings management literature, see Healy and Wahlen (1999).

[2] Some exceptions are as follows: Louis and Robinson (2005) examine the information role of discretionary accruals around stock splits. Choi et al. (2011) examine the value relevance of discretionary accruals during the Asian financial crisis of 1997–1998. Adut et al. (2013) examine the link between the predictive property of discretionary accruals and managerial incentives. Kwon and Yin (2013) compare the association between earnings persistence and discretionary accruals between high-tech and non-high-tech firms.

[3] Also, LaFond and Watts (2008) argue that the presence of growth options increases information asymmetry between managers and shareholders. Different from our focus (discretionary accruals) but not inconsistent with it, LaFond and Watts (2008) argue for the role of conservatism in firms with growth options. More generally, growth has been associated with information asymmetry in both the accounting and finance literatures.

[4] An extensive analytical literature explains these and other factors discouraging voluntary disclosure and preventing the full disclosure scenario described in Grossman and Hart (1980).

mechanisms. Specifically, we argue that managers tend to use discretionary accruals, especially income-increasing discretionary accruals, to signal future favorable performance when they are confident that future performance will meet or exceed current expectations.[5]

An interesting issue concerns the timing of disclosure. Most information, in the absence of disclosure by firms, would eventually filter to markets as events materialize. Given this, why would firms want to disclosure in an earlier period? The literature suggests several plausible reasons. Firms may want to increase disclosure in the current period in order to decrease risks (or increase value) for investors. For example, higher quality disclosure lowers liquidity risk (Sadka 2011) and also lowers the cost of capital (Francis et al. 2005). Firms also benefit in their financing, operations, and investments. For example, disclosure facilitates equity issuance (Korajczyk et al. 1991) and supports equity incentives for managers (Aboody and Kasznik 2000).

Given the significant benefits of disclosure discussed above, there are some incentives for false signaling. It is well known that earnings management can sometimes be opportunistic (e.g., Guay et al. 1996). The earnings management literature indicates numerous contexts in which managers have incentives to provide false signals. However, false signaling can potentially be costly to managers and to firms. Managers may lose their reputation in financial markets and this may have real effects such as an increase in the cost of capital (e.g., Francis et al. 2005). Additionally, there are litigation concerns for firms as well as their auditors. Thus, opportunistic behavior has costs that may offset benefits.

We argue that managers of high-growth firms have compelling reasons to signal performance using discretionary accruals. Rational investors likely infer such behavior and price shares accordingly. Assuming markets are efficient in this manner, it follows that discretionary accruals are associated with stock returns to a relatively greater extent (that is, priced more) in high-growth firms.[6]

Our paper extends Subramanyam (1996) which examines the pricing of discretionary accruals in a general setting. One criticism of Subramanyam (1996) is that it does not take managers' incentives into consideration. We mitigate this problem by identifying a specific scenario in which managers have strong incentives to signal. We argue that there is significant variation in the pricing of discretionary accruals, and that firm growth affects this variation. We also contribute by examining the differential information roles of income increasing (positive) discretionary accruals. We expect that managers are more likely to use income-increasing discretionary accruals to signal future favorable performance in high-growth firms, and we argue therefore that positive discretionary accruals will be relatively more informative in high-growth firms. Thus, our paper tests two related hypotheses: (a) discretionary accruals are more informative in high-growth firms, and (b) this informativeness is predominantly in the positive discretionary accruals scenario.

We measure discretionary accruals using the cross-sectional Jones (1991) model. We do so for several reasons. First, Lee et al. (2006) point out that controlling for performance

[5] Our conjecture is consistent with an analytical model presented by Lee et al. (2006) in which managers face the following tradeoff in managing earnings: they can increase share price by increasing earnings but they also incur a cost that rises with every dollar of managed earnings. Because the benefit of increasing earnings is assumed to be greater for growing firms (the stock price response is greater—as predicted by standard dividend discount models), the model predicts that growing firms are more likely to manage their earnings upward. This prediction is consistent with empirical evidence demonstrating a positive link between discretionary accruals and return of assets (Dechow et al. 1998; Subramanyam 1996).

[6] The use of discretionary accruals does not preclude the use of other more traditional voluntary disclosure mechanisms. We are merely arguing that discretionary accruals have relatively attractive features as signaling devices.

and/or growth in the discretionary accruals model will not only reduce the power of tests but also underestimate the amount of managed earnings for firms with better performance or higher growth. Second, prior studies find that the cross-sectional Jones model has superior power in detecting earnings management (e.g., Guay et al. 1996; Subramanyam 1996; DeFond and Subramanyam 1998; Bartov et al. 2000). Third, a cross-sectional model allows a larger sample size and a lower risk of survivorship bias compared to time-series models (Krishnan 2003). Fourth, possible misspecification caused by omitted variables in the Jones model (e.g., Bernard and Skinner 1996; Kothari et al. 2005; Collins et al. 2011) is less likely to affect our results because the main purpose of our study is to compare differences between high-growth and low-growth firms.[7] Finally, the use of the cross-sectional Jones model facilitates comparison with Subramanyam (1996) and other related studies.

Our main test is based on a regression of stock returns on various components of earnings (cash flows, non-discretionary accruals, and discretionary accruals), growth, and the interaction between discretionary accruals and growth. This is an extension of the model used in Subramanyam (1996) to which growth is added as an explanatory variable; both the separate and interactive effects of growth are included. We hypothesize that the coefficient of the interaction between discretionary accruals and growth will be positive signifying a greater pricing role for discretionary accruals in growing firms. Using a large sample of 41,023 firm-year observations from 1987 to 2009 for 7,988 unique firms, we find a significantly positive coefficient on discretionary accruals, which is consistent with Subramanyam (1996). However, in general, we do not find a significant coefficient on the interaction between discretionary accruals and firm growth. Thus, in the aggregate, growth does not appear to influence the pricing of discretionary accruals.

However, when we partition the sample into those with income increasing (positive) and income decreasing (negative) discretionary accruals, we find that the former subsample shows a significantly positive coefficient on the interaction between discretionary accruals and firm growth while the latter shows a significantly negative coefficient. This implies that the hypothesized effect of growth is solely found in the positive discretionary accrual sample. More specifically, growth enhances the informativeness of discretionary accruals when the accruals are positive and decreases informativeness when the accruals are negative. Overall, this is consistent with our second hypothesis and also with Lee et al. (2006) which suggest a relatively greater importance for income-increasing discretionary accruals in high-growth firms.

We further conduct a series of robustness checks and our results hold irrespective of the different measures of firm growth (i.e., market to book ratio, price to earnings ratio and sales growth) and discretionary accruals (i.e., performance matched model and performance and growth matched model), different statistical models and different samples that we use. The insignificant results on the interaction between firm growth and non-discretionary accruals further mitigate the misclassification concern in the discretionary accruals model.

One may argue that managers choose discretionary accruals opportunistically, but that the market responds mechanically to total earnings, so that discretionary accruals are "erroneously priced" by the market in the current period (e.g., Sloan 1996). In order to mitigate this alternative opportunism explanation, we test whether current period

[7] Nonetheless, to mitigate the misspecification concern in the cross-sectional Jones model, we report supplemental tests using both the performance matched model (Kothari et al. 2005) and the performance and growth matched model (Collins et al. 2011), and our results remain unchanged.

discretionary accruals help predict future performance. We find that the association between positive discretionary accruals and future performance—measured by future earnings, future operating cash flow and future dividend increases, respectively—is greater for high-growth firms than for low-growth firms. In contrast, the association between negative discretionary accruals and future performance is no different or lower for high-growth firms than for low-growth firms.

Finally, we find that the pricing of positive discretionary accruals in high-growth firms is conditional on the level of information asymmetry. Specifically, we find that the association between positive discretionary accruals and stock returns is more pronounced for high-growth firms with higher information asymmetry than for high-growth firms with lower information asymmetry. The results indicate that the incentives of managers in high-growth firms to use discretionary accrual to convey private information are mitigated if the firms have a good information environment.

Our main contribution lies in identifying and exploiting a specific scenario in which discretionary accruals are used by managers in a positive fashion to convey information to market participants. In doing so we build on evidence presented earlier in Subramanyam (1996) and at the same time respond to calls in Guay et al. (1996) for researchers to more carefully identify scenarios where managerial incentives can be ascertained. Our results concerning the relatively higher pricing of positive discretionary accruals in high-growth firms implies that market participants demand more private information especially when information asymmetry is high and that managers use the flexibility provided by GAAP to meet this demand. This view is consistent with the preparers' incentives literature (e.g., Ball et al. 2000).

Our paper is related to Lee et al. (2006). As mentioned earlier, Lee et al. (2006) show that discretionary accruals is related to analyst estimates of long-term earnings growth implying that, comparatively, managers of high-growth firms signal to a greater extent. In our study, we show that positive discretionary accruals are priced to greater extent in high-growth firms. We also show that the pricing of positive discretionary accruals is conditional on information environment of the firms. Thus, our study complements and extends Lee et al. (2006).

The reminder of the study is organized as follows. In Sect. 2 we review related literature and propose our hypotheses. Section 3 discusses our sample and variables. Section 4 presents our results and Sect. 5 concludes.

2 Background and hypotheses

GAAP provides latitude to managers. Consequently, accruals, and, hence earnings, reflect managerial motives. There are three non-mutually exclusive motives examined in the literature (Holthausen 1990). The first is managerial opportunism (e.g., Bannister and Newman 1996; Richardson 2000; Lim et al. 2008): managers bias earnings upward or downward for reasons such as maximizing bonuses and minimizing option strike prices. The second is efficient contracting (e.g., Watts 1977): managers use financial statements to reduce the agency costs between managers, bondholders and shareholders. The third is signaling (e.g., Subramanyam 1996; Louis and Robinson 2005): managers convey their private information to investors to alleviate problems of information asymmetry.

All three motives and especially the third motive, signaling, suggest a link between discretionary accruals and returns. Subramanyam (1996) evaluates this link by regressing returns on various components of earnings including discretionary accruals. He finds that the coefficient of discretionary accruals is significantly positive which provides evidence of the pricing of discretionary accruals. Moreover, the decomposition of earnings into cash flows, discretionary and non-discretionary accruals provides additional information and increases R-squared. This paper notes two caveats. First, the evidence is contingent on the model for decomposing accruals into their discretionary and non-discretionary components. Second, the motive for the managerial choice that resulted in informative accruals cannot be discerned easily: its pricing is consistent both with managerial opportunism and with the desire of managers either to signal private information or to enhance contracting.[8]

The rather large literature on earnings management is founded on the ability of the researcher to isolate a business setting and therefore to have the ability to infer managerial motives. Since the discovery of a simple and powerful method to estimate discretionary accruals (Jones 1991), the literature focused on explaining managerial behavior by analyzing the pattern of discretionary accruals in specific settings. A small list of these settings include: option granting (e.g., McAnally et al. 2008); financing (e.g., Cohen and Zarowin 2010); seasoned equity offering (e.g., Shivakumar 2000); mergers and acquisition (e.g., Louis 2004); warranty information (Cohen et al. 2011); discontinued operations (Barua et al. 2010).

Louis and Robinson (2005) is an exception which focuses on the signaling role of discretionary accruals. By examining the event of stock splits, this study reports that, at the split announcement, the market construes the pre-split abnormal accrual as a signal of managerial optimism rather than managerial opportunism.

Our study exploits well-known differences between high-growth and low-growth firms. There is universal recognition that high-growth firms by-and-large have unique characteristics. Two of these characteristics are especially relevant in our analysis: the presence of high levels of information asymmetry (managers have private information not available to markets) and agency costs (e.g., Core 2001). Because of these two problems, we hypothesize that managers in growing firms have greater incentives to signal their private information about firm future performance through discretionary accruals. In equilibrium, investors will recognize this incentive and attach value to this information. In other words, discretionary accruals will be priced by investors.

One may argue that instead of using accruals, managers could use press releases, management forecasts, conference calls and other direct communication methods to signal their private information. However, extant literature finds that managers are reluctant to make optimistic projections, especially long-term forecasts, because such projections would expose them to possible litigation if they do not materialize (e.g., Skinner 1997; Baginski et al. 2002). Also, explicit and optimistic projections may expose firms to agency costs (Berger and Hann 2007) or proprietary costs (e.g., Verrecchia 1983; Berger and Hann 2007). Thus, managers might prefer to use indirect communication methods such as discretionary accruals to more direct mediums such as press releases, management forecasts, or conference calls to signal their optimism. Accordingly, we offer the following hypothesis.

Hypothesis 1 Compared to low-growth firms, the sensitivity of returns to discretionary accruals is relatively higher in high-growth firms.

[8] This conundrum is also expressed in the earnings smoothing literature (e.g., Tucker and Zarowin 2006). Managers may choose income to maximize their bonuses and compensation. Alternatively, they may smooth income to improve the informativeness of income.

Our work is also influenced by the analytical model presented in Lee et al. (2006) which suggests a relatively greater importance for income-increasing discretionary accruals in high-growth firms. This perspective is reasonable if one considers the prevalence of positive NPV options in high-growth firms. Information about such options can potentially be signaled using positive discretionary accruals. Additionally, this perspective is supported by the "equity incentives" analysis in Abarbanell and Lehavy (2003) according to which firms with higher price-earnings sensitivity have greater incentives to engage in income-increasing earnings management. Income decreasing discretionary accruals potentially have an equally important role, but their pricing relationship may be relatively weaker because of tendencies toward income smoothing in the presence of small impacts and toward earnings bath in the presence of large impacts. Accordingly, we test a more nuanced version of the first hypothesis in which the pricing relationship is hypothesized to be greater in high-growth firms if the discretionary accruals are positive.[9] This approach of defining scenarios (or samples) in which managerial incentives can be specified is also consistent with the recommendation of Guay et al. (1996) that we mentioned earlier.

Hypothesis 2 Compared to low-growth firms, the sensitivity of returns to *positive* discretionary accruals is relatively higher in high-growth firms.

3 Sample, variables and summary statistics

3.1 Sample selection

Panel A of Table 1 summarizes the sample selection process. We start with all available firms in the CRSP and the Compustat databases from 1987 to 2009. For these firms, we extract returns, earnings, operating cash flows as well as variables necessary for calculating discretionary accruals (revenues; property, plant and equipment; total assets). Following prior studies such as Krishnan (2003), we require that each firm should have at least six consecutive years of data on these variables. We also delete firm-years with missing data for any of the variables used in the estimation. Finally, to control the outlier problem, we delete extreme-value of main variables including net income, operating cash flow, discretionary accruals, non-discretionary accruals, market to book ratio and firm size (top 99 % and bottom 1 %). The final sample includes 41,023 firm-year observations from 1987 to 2009 for 7,988 unique firms.

Panels B and C of Table 1 report the two-digit SIC industry distribution and the annual distribution of our sample, respectively. The sample firms come from 71 industry categories, with the largest number of observations in business services and the smallest number of observations in legal services. Within our time period 1987 to 2009, year 1995 has the largest number of observations (7.65 % of the total observations), and year 2009 has the smallest number of observations (0.92 % of the total observations).

3.2 Variables

Annual stock returns are obtained by compounding monthly stock returns for a twelve-month period ending 4 months after the end of the fiscal year of the firm (e.g., Hayn 1995;

[9] Because of the greater uncertainty concerning the pricing of negative discretionary accruals, we leave this relationship unspecified. Our tests focus on the pricing of positive discretionary accruals; evidence on negative discretionary accruals is offered but in an exploratory vein.

Table 1 Distribution of sample firms

Panel A: Sample selection				
Total firm-year observations after merging Computat and CRSP				153,086
After deleting missing information for all variables used in this study				80,230
After deleting missing information for discretionary accruals				66,724
After deleting firms without six consecutive years of data				44,056
After deleting outliers of main variables				41,023

SIC2	Industry	Freq.	Percent	Cum.
Panel B: Industry distribution				
01	Agricultural production—crops	105	0.26	0.26
02	Agricultural production—livestock and animal specialties	6	0.01	0.27
07	Agricultural services	44	0.11	0.38
08	Forestry	6	0.01	0.39
09	Fishing, hunting and trapping	11	0.03	0.42
10	Metal mining	497	1.21	1.63
12	Coal mining	55	0.13	1.76
13	Oil and gas extraction	1,464	3.57	5.33
14	Mining and quarrying of nonmetallic minerals, except fuels	148	0.36	5.69
15	Building construction—general contractors and operative builders	210	0.51	6.21
16	Heavy construction, except building construction—contractors	193	0.47	6.68
17	Construction—special trade contractors	98	0.24	6.92
20	Food and kindred products	1,081	2.64	9.55
21	Tobacco products	33	0.08	9.63
22	Textile mill products	252	0.61	10.25
23	Apparel, finished products from fabrics and similar materials	455	1.11	11.35
24	Lumber and wood products, except furniture	266	0.65	12
25	Furniture and fixtures	302	0.74	12.74
26	Paper and allied products	572	1.39	14.13
27	Printing, publishing and allied industries	736	1.79	15.93
28	Chemicals and allied products	3,222	7.85	23.78
29	Petroleum refining and related industries	332	0.81	24.59
30	Rubber and miscellaneous plastic products	516	1.26	25.85
31	Leather and leather products	186	0.45	26.3
32	Stone, clay, glass, and concrete products	280	0.68	26.98
33	Primary metal industries	706	1.72	28.71
34	Fabricated metal products, except machinery & transport equipment	693	1.69	30.4
35	Industrial and commercial machinery and computer equipment	2,509	6.12	36.51
36	Electronic, electrical equipment and components, except computer equipment	3,403	8.3	44.81
37	Transportation equipment	957	2.33	47.14
38	Mesr/anlyz/cntrl instrmnts; photo/med/opt gds; watchs/clocks	2,656	6.47	53.61

Table 1 continued

SIC2	Industry	Freq.	Percent	Cum.
39	Miscellaneous manufacturing industries	405	0.99	54.6
40	Railroad transportation	147	0.36	54.96
41	Local, suburban transit & interurban highway passenger transport	21	0.05	55.01
42	Motor freight transportation	291	0.71	55.72
44	Water transportation	254	0.62	56.34
45	Transportation by air	360	0.88	57.22
46	Pipelines, except natural gas	26	0.06	57.28
47	Transportation services	145	0.35	57.63
48	Communications	1,374	3.35	60.98
49	Electric, gas and sanitary services	2,650	6.46	67.44
50	Wholesale trade—durable goods	1,071	2.61	70.05
51	Wholesale trade—nondurable goods	593	1.45	71.5
52	Building materials, hardware, garden supply and mobile home dealers	87	0.21	71.71
53	General merchandise stores	314	0.77	72.48
54	Food stores	353	0.86	73.34
55	Automotive dealers and gasoline service stations	153	0.37	73.71
56	Apparel and accessory stores	444	1.08	74.79
57	Home furniture, furnishings and equipment stores	202	0.49	75.28
58	Eating and drinking places	667	1.63	76.91
59	Miscellaneous retail	628	1.53	78.44
60	Depository institutions	45	0.11	78.55
61	Nondepository credit institutions	205	0.5	79.05
62	Security and commodity brokers, dealers, exchanges and services	278	0.68	79.73
63	Insurance carriers	422	1.03	80.76
64	Insurance agents, brokers and service	186	0.45	81.21
65	Real estate	406	0.99	82.2
67	Holding and other investment offices	795	1.94	84.14
70	Hotels, rooming houses, camps, and other lodging places	205	0.5	84.64
72	Personal services	147	0.36	85
73	Business services	3,598	8.77	93.77
75	Automotive repair, services and parking	82	0.2	93.97
76	Miscellaneous repair services	28	0.07	94.04
78	Motion pictures	203	0.49	94.53
79	Amusement and recreation services	354	0.86	95.39
80	Health services	692	1.69	97.08
81	Legal services	2	0	97.08
82	Educational services	113	0.28	97.36
83	Social services	71	0.17	97.53
87	Engineering, accounting, research, management and related services	617	1.5	99.04
99	Nonclassifiable establishments	395	0.96	100

Table 1 continued

SIC2	Industry	Freq.	Percent	Cum.
Total		41,023	100	

Year	Freq.	Percent	Cum.
Panel C: Year distribution			
1987	512	1.25	1.25
1988	2,491	6.07	7.32
1989	2,590	6.31	13.63
1990	2,425	5.91	19.55
1991	2,503	6.10	25.65
1992	2,719	6.63	32.27
1993	2,891	7.05	39.32
1994	3,083	7.52	46.84
1995	3,139	7.65	54.49
1996	2,841	6.93	61.41
1997	2,538	6.19	67.6
1998	2,113	5.15	72.75
1999	1,799	4.39	77.14
2000	1,371	3.34	80.48
2001	1,190	2.90	83.38
2002	1,049	2.56	85.94
2003	1,011	2.46	88.4
2004	940	2.29	90.69
2005	938	2.29	92.98
2006	868	2.12	95.1
2007	886	2.16	97.26
2008	749	1.83	99.08
2009	377	0.92	100
Total	41,023	100	

This table presents sample selection process and the distributions of the total 41,023 observations in our study. Panel A reports sample selection process. Panel B reports the distributions by two-digit SIC codes, and Panel C reports the distribution by years

Basu 1997). Net income is measured as earnings before extraordinary items and discounted operations. Operating cash flows are as defined in Compustat. Total accruals are defined as the differences between net income and operating cash flows. All three variables are deflated by total assets at the beginning of the period.

Following prior studies such as Subramanyam (1996) and Krishnan (2003), we use the cross-sectional version of the Jones model to estimate discretionary accruals.[10] Subramanyam (1996) compares alternative models for accruals and finds that parameter estimates in cross-sectional Jones models are more precise than their time-series counterparts. Bartov et al. (2000) evaluates the ability of seven models of accruals in detecting earnings management, and they find that the cross-sectional Jones model and the modified Jones

[10] We also use the modified Jones model and our results are qualitatively unchanged.

model outperform their time-series counterparts. Krishnan (2003) points out an additional advantage of using a cross-sectional model: it allows a larger sample size and a lower risk of survivorship bias compared to time-series models. DeFond and Subramanyam (1998) also use a cross-sectional version of the Jones model due to its superior specification and less restrictive data requirements.

One may argue that because of the possible misspecification problem of the Jones model (e.g., Bernard and Skinner 1996), more recent models, such as the performance matched model (Kothari et al. 2005) or the performance and growth matched model (Collins et al. 2011), might be more suitable for the study. However, our study concerns the impact of growth on the pricing of discretionary accruals. Referring to such a context, Lee et al. (2006) point out that because growth and performance influence managerial incentives to report higher earnings, they should not be included as explanatory variables in accruals models. In their paper, they conclude that “Fully filtering out the discretionary accrual associated with performance or growth will not only reduce the test power but also bias downwards the amount of managed earnings for firms with better performance or higher growth.”

Therefore, we argue that the cross-sectional Jones model fits our study well. Nonetheless, misspecification in the accruals model is a common problem in most earnings management or accruals pricing studies. To mitigate this concern, we provide supplement tests using both the performance matched (Kothari et al. 2005) and the performance and growth matched (Collins et al. 2011) models.

For the cross-sectional model, total accruals are decomposed into non-discretionary and discretionary components as follows. For each industry-year (combination of 2-digit SIC code and fiscal year), we estimate non-discretionary accruals as a function of the level of property, plant and equipment, and changes in revenue:

$$\frac{ACCR_{j,t}}{TA_{j,t-1}} = \alpha_1 \frac{1}{TA_{j,t-1}} + \alpha_2 \frac{\Delta REV_{j,t}}{TA_{j,t-1}} + \alpha_3 \frac{PPE_{j,t}}{TA_{j,t-1}} + e_{j,t} \tag{1}$$

where ACCR is total accruals, TA is total assets, ΔREV is change in net revenue and PPE is property, plant and equipment. The subscript j refers to firm and the subscript t refers to year. The fitted value of this model equals non-discretionary accruals. The error term equals discretionary accruals.

In the accounting and finance literature, market-to-book ratio is widely used as the proxy for firm growth (e.g., Gaver and Gaver 1993; Skinner 1993; Lang et al. 1996). Kallapur and Trombley (1999) examine different measures of firm growth opportunities and find market-to-book ratio is the one most highly correlated with future growth. They conclude that market-to-book ratio is a valid and reliable growth proxy. Therefore, we mainly use market-to-book ratio as the proxy for firm growth. In supplemental tests, we use other proxies such as sales growth and the price-earnings ratio to examine the robustness of our results.

3.3 Summary statistics

Panel A of Table 2 provides summary statistics of total accruals (ACCR), non-discretionary accruals (NDAC), discretionary accruals (DAC), net income (NI), operating cash flows (OCF), returns (R), size, and market-to-book (MB). The means for NI, OCF and ACCR are 0.0732, 0.0673 and 0.0059 respectively and are similar to those reported in other studies such as Subramanyam (1996) and Krishnan (2003). Our key test variable

Table 2 Summary statistics

	Mean	Median	SD	25 %	75 %	% positive
Panel A: Descriptive statistics						
Total accruals (ACCR)	0.0059	0.0005	0.1079	−0.0338	0.0403	50.77
Non-discretionary accruals (NDAC)	−0.009	−0.006	0.096	−0.038	0.021	43.34
Discretionary accruals (DAC)	0.0158	0.0097	0.1227	−0.042	0.0691	55.49
Net income (NI)	0.0732	0.0862	0.1573	0.0289	0.1443	82.34
Operating cash flow (OCF)	0.0673	0.0779	0.1566	0.0122	0.1384	78.77
Returns (R)	0.1504	0.1291	0.4792	−0.122	0.3995	63.60
Size	5.3004	5.1732	2.0878	3.6781	6.8532	–
Market to book (MB)	2.6074	1.8751	2.2803	1.1938	3.1494	–

	NI	OCF	ACCR	NDAC	DAC
Panel B: Spearman correlations among earnings components					
NI	1.0000				
OCF	0.7264 (0.00)	1.0000			
ACCR	0.4073 (0.00)	−0.2556 (0.00)	1.0000		
NDAC	0.1448 (0.00)	−0.0261 (0.00)	0.2809 (0.00)	1.0000	
DAC	0.2451 (0.00)	−0.2045 (0.00)	0.6603 (0.00)	−0.5353 (0.00)	1.0000

Panel A presents descriptive statistics for the sample. The sample consists of 41,023 observations for the 1987–2009 period. Total accruals (ACCR) is the difference between Net income (NI) and Operating cash flow (OCF). Net income (NI) is net income before extraordinary items and discontinued operations. Operating cash flow (OCF) is obtained from the Compustat item operating activities-net cash flow. Non-discretionary accruals (NDAC) and Discretionary accruals (DAC) are determined using the cross-sectional variation of the Jones (1991) model. All above variables are deflated by total assets at the beginning of the period. Returns (R) is the cumulative annual stock returns measured over a twelve-month period ending 4 months after the fiscal year end. Size is natural log of the firms' total assets. Market to book (MB) is the ratio of market value of equity to book value of equity

Panel B provides Spearman correlations among different earnings components. Total accruals (ACCR) is the difference between Net income (NI) and Operating cash flow (OCF). Net income (NI) is net income before extraordinary items and discontinued operations. Operating cash flow (OCF) is obtained from the Compustat item operating activities-net cash flow. Non-discretionary accruals (NDAC) and Discretionary accruals (DAC) are determined using the cross-sectional variation of the Jones (1991) model. All above variables are deflated by total assets at the beginning of the period. *P* values are in parentheses

DAC has a mean (median) of 0.0158 (0.0097), with about 56 % of the values being positive.[11] This variable also has values similar to those reported in the literature (e.g., Louis and Robinson 2005).

Panel B of Table 2 provides Pearson correlations among various components of net income. As expected, because NI is the sum of various components, we find that NI is positively correlated with OCF, ACCR, NDAC and DAC. Among the four components of net income, we find that OCF has the highest correlation with NI (0.72) while NDAC has

[11] We also find that high-growth firms have a greater percentage of positive discretionary accruals (57 %) compared to low-growth firms (54 %).

the lowest correlation (0.14). Consistent with Dechow (1994) and Subramanyam (1996), we find that OCF is negatively correlated with all three accrual measures. Specifically, the correlation between OCF and ACCR is −0.25, the correlation between OCF and DAC is −0.20, and the correlation between OCF and NDAC is −0.026.

3.4 Univariate comparison

As we are interested in differences between high-growth firms and low-growth firms, we start by providing two-sample *t* tests in Table 3. Means (and SD) of ACCR, NDAC, DAV, NI, OCF and R are reported for high-growth and low-growth sub-samples along with a test of whether the means are equal in the two sub-samples. We find that all categories of accruals—ACCR, NDAC and DAC—are higher in high-growth firms, and in two categories, ACCR and DAC, the difference in values between high-growth and low-growth firms is statistically significant. For example, DAC is almost twice as large in high-growth firms: means for high-growth and low-growth firms are 0.0201 and 0.0116 respectively. We also note a significant difference in R.

The above result is consistent with the prior literature. Dechow et al. (1998) shows that accruals are essentially related to the product of the operating cycle in days (days receivables plus days inventory minus days payables) times the shock to Sales. Also, Lee et al. (2006) models earnings management and finds that in equilibrium, the amount of managed earnings rises with expected earnings growth. Taken together, these papers indicate that ACCR as well as DAC would be greater in high-growth firms compared to low-growth firms. The insignificant difference in NDAC accruals between two sub-samples is consistent with the cross-sectional Jones model being able to correctly decompose total accruals into their discretionary and non-discretionary components.

Table 3 Univariate tests

	High-growth firms (N = 20,488)		Low-growth firms (N = 20,575)		High–low	
	Mean	SD	Mean	SD	Difference	T value
ACCR	0.0108	0.1191	0.0010	0.0954	0.0098***	[9.20]
NDAC	−0.0092	0.1004	−0.0105	0.0914	0.0013	[1.38]
DAC	0.0201	0.1289	0.0116	0.1160	0.0085***	[7.02]
NI	0.0827	0.1947	0.0642	0.1071	0.0186***	[12.701]
OCF	0.0714	0.1941	0.0632	0.1069	0.0082***	[5.30]
R	0.2627	0.4881	0.0387	0.4429	0.2240***	[48.67]

This table presents univariate tests on the differences between high-growth firms and low-growth firms. We separate the full sample into two groups based on the median value of Market to book (MB). MB is the ratio of market value of equity to book value of equity. Total accruals (ACCR) is the difference between Net income (NI) and Operating cash flow (OCF). Net income (NI) is net income before extraordinary items and discontinued operations. Operating cash flow (OCF) is obtained from the Compustat item operating activities-net cash flow. Non-discretionary accruals (NDAC) and Discretionary accruals (DAC) are determined using the cross-sectional variation of the Jones (1991) model. All above variables are deflated by total assets at the beginning of the period. Returns (R) is the cumulative annual stock returns measured over a twelve-month period ending 4 months after the fiscal year end. The means of the differences between the variables for two subsamples and absolute values of *t* statistics are also reported. Significance at the 10, 5, and 1 % levels are indicated by *, **, and ***, respectively

4 Empirical results

4.1 Firm growth and the pricing of discretionary accruals

Our main tests concern the pricing of discretionary accruals—the relationship between returns and discretionary accruals—and how this relationship is affected by firm growth. Accordingly, our model takes the form:

$$R = \alpha_0 + \alpha_1 GROW + \alpha_2 OCF + \alpha_3 NDAC + \alpha_4 DAC + \alpha_5 DAC * GROW + \varepsilon \quad (2)$$

where GROW is a dummy variable which equals one if a firm has MB (or alternate proxy) higher than its median value in our sample. Returns (R) is regressed on growth (GROW), components of earnings (OCF, NDAC, DAC) and our test variable DAC*GROW. In most regressions, we also control for industry differences by using dummies for 2-digit SIC classification and year effect by using year dummies.

Table 4 presents the basic results of our study. In this table, model 1 is the base model in which we do not account for growth while the other models account for growth. The adjusted R-squared values range from 14 % in model 1 to about 19 % in the other models. Thus, the addition of growth as an explanatory variable adds significantly to the model: for

Table 4 OLS regression of stock returns on earnings components conditional on firm growth

	(1) Full sample	(2) Full sample	(3) DAC >0	(4) DAC< 0
OCF	0.500*** [24.19]	0.453*** [22.73]	0.424*** [14.76]	0.501*** [17.66]
NDAC	0.521*** [14.21]	0.446*** [12.58]	0.479*** [10.07]	0.384*** [6.76]
DAC	0.557*** [19.14]	0.496*** [14.62]	0.462*** [8.26]	0.661*** [9.82]
High-MB firms		0.209*** [44.54]	0.181*** [22.14]	0.179*** [19.05]
DAC*High-MB firms		−0.003 [0.06]	0.267*** [4.04]	−0.410*** [4.49]
Control for				
Industry effect	Y	Y	Y	Y
Year effect	Y	Y	Y	Y
Observations	41,023	41,023	22,763	18,260
Adjusted R-squared	0.14	0.18	0.18	0.19

This table provides OLS regressions on the relation between stock returns and earnings components conditional on firm growth. The dependent variable is Returns (R), which is the cumulative annual stock returns measured over a twelve-month period ending 4 months after the fiscal year end. Total accruals (ACCR) is the difference between Net income (NI) and Operating cash flow (OCF). Net income (NI) is net income before extraordinary items and discontinued operations. Operating cash flow (OCF) is obtained from the Compustat item operating activities-net cash flow. Non-discretionary accruals (NDAC) and Discretionary accruals (DAC) are determined using the cross-sectional variation of the Jones (1991) model. All above variables are deflated by total assets at the beginning of the period. High-MB firms is a dummy variable which is one if the market to book (MB) of a firm is above the median value of market to book (MB). MB is the ratio of market value of equity to book value of equity. Absolute values of heteroskedasticity robust *t* statistics are in parentheses. Significance at the 10, 5, and 1 % levels is indicated by *, **, and ***, respectively example, the Vuong statistic is significant at the 1 % level when we compare models 1 and 2.

Table 4 model 1, the base model, shows that returns are related to OCF (coefficient equals 0.500; $t = 24.19$), NDAC (coefficient equals 0.521; $t = 14.21$), and DAC (coefficient equals 0.557; $t = 19.14$). The three coefficients appear similar indicating no major differences in the pricing of OCF, NDAC and DAC. This result appears in line with Subramanyam (1996). We turn next to whether growth affects the pricing of DAC. Model 2 adds two explanatory variables: GROW and DAC*GROW (these variables appear as High-MB firms and DAC*High-MB firms in the table). The coefficient of GROW is 0.209 ($t = 44.54$). This indicates that returns are higher for firms with higher growth. Our main test variable is DAC*GROW whose coefficient is −0.003 ($t = 0.06$). This indicates that for the full sample, DAC is not differentially priced for growing firms. Thus, in general, Hypothesis 1 is not supported.

We examine this result further in models 3 and 4 in which we separate the sample into DAC >0 and DAC <0 subsamples. In particular, model 3 provides a test of hypothesis 2 while model 4 provides additional information that along with model 3 helps us better understand model 2. In model 3 (DAC >0), the coefficient of DAC*GROW is 0.267 ($t = 4.04$). This indicates a higher sensitivity between R and DAC in growing firms: a slope of 0.729 (=0.462 + 0.267) for high MB firms versus 0.462 for low MB firms. In model 4 (DAC <0), the coefficient of DAC*GROW is −0.410 ($t = 4.49$). This indicates a lower sensitivity between R and DAC in growing firms: a slope of 0.251 (=0.661 − 0.410) for high MB firms versus 0.661 for low MB firms.

In sum, Table 4 supports Hypothesis 2 but not Hypothesis 1. Direct tests of Hypothesis 1 and 2 are offered by models 2 and 3 respectively. In model 2, we find that the coefficient of DAC*GROW is insignificant, inconsistent with Hypothesis 1. Instead, in model 3 (DAC >0 sample), the same coefficient is significantly positive, consistent with Hypothesis 2. The lack of support for Hypothesis 1 is explained by model 4 (DAC <0) in which the coefficient of DAC*GROW is significantly negative. Thus, in the aggregate (DAC >0 and DAC <0), the effects of growth are offset and become insignificant. These results are consistent with managers using discretionary accruals robustly in high-growth firms to convey good news but not necessarily to the same extent to convey bad news. Earlier, we discussed the performance signaling, efficient contracting and opportunism explanations for managerial use of accruals. Our results imply a relatively stronger role for performance signaling with positive discretionary accruals in high-growth firms compared to low-growth firms and a relatively weaker role for performance signaling with negative discretionary accruals.

4.2 Robustness checks

4.2.1 Alternative statistical models

We first consider the possibility of omitted variables affecting annual returns as well as discretionary accruals. These omitted variables can potentially bias our estimates. To limit this bias we provide controls for firm-level fixed effects in our regressions. This is accomplished by subtracting firm-level averages from each observation of a variable. We also control explicitly for year effects by inserting a dummy variable for each year in the sample.

Panel A of Table 5 reports the results of the fixed effects regression. Model 1, run using the full sample, indicates significant coefficients of the three components of earnings. In

Table 5 Robustness checks: Different statistical models

	(1) Full sample	(2) DAC >0	(3) DAC <0
Panel A: Firm-year fixed effect regression			
OCF	0.628*** [25.69]	0.612*** [16.49]	0.694*** [17.26]
NDAC	0.462*** [13.43]	0.458*** [9.06]	0.319*** [5.14]
DAC	0.325*** [49.22]	0.302*** [25.91]	0.288*** [20.62]
High-MB firms	0.602*** [16.56]	0.527*** [7.91]	0.730*** [8.65]
DAC* High-MB firms	−0.026 [0.63]	0.180** [2.33]	−0.476*** [4.41]
Observations	41,023	22,763	18,260
Adjusted R-squared	0.10	0.10	0.11
Panel B: Fama–MacBeth regression			
OCF	0.403*** [6.99]	0.402*** [6.55]	0.444*** [7.46]
NDAC	0.444*** [6.29]	0.583*** [8.44]	0.361*** [3.28]
DAC	0.196*** [10.06]	0.172*** [8.87]	0.169*** [8.04]
High-MB firms	0.442*** [6.09]	0.474*** [6.63]	0.578*** [4.19]
DAC* High-MB firms	−0.007 [0.12]	0.250** [2.46]	−0.405*** [3.74]
Observations	41,023	22,763	18,260
Adjusted R-squared	0.10	0.10	0.11

This table provides robustness checks on the relation between stock returns and earnings components conditional on firm growth using different statistical models. Panels A and B report firm-year fixed effect regression results and Fama–MacBeth regression results (Fama and MacBeth 1973), respectively. The dependent variable is Returns (R), which is the cumulative annual stock returns measured over a twelve-month period ending 4 months after the fiscal year end. Total accruals (ACCR) is the difference between Net income (NI) and Operating cash flow (OCF). Net income (NI) is net income before extraordinary items and discontinued operations. Operating cash flow (OCF) is obtained from the Compustat item operating activities-net cash flow. Non-discretionary accruals (NDAC) and Discretionary accruals (DAC) are determined using the cross-sectional variation of the Jones (1991) model. All above variables are deflated by total assets at the beginning of the period. High-MB firms is a dummy variable which is one if the market to book (MB) of a firm is above the median value of market to book (MB). MB is the ratio of market value of equity to book value of equity. Absolute values of heteroskedasticity robust t statistics are in parentheses. Significance at the 10, 5, and 1 % levels is indicated by *, **, and ***, respectively

particular, the coefficient of DAC is 0.325 ($t = 49.22$). Turning to the test variable, we find that the coefficient of DAC*GROW is −0.026 ($t = 0.63$). Thus, in the aggregate, we again find no evidence that discretionary accruals are priced more in growing firms. But, similar to Table 4, we find a different answer when we run the model separately for positive and negative discretionary accrual. In model 2 (DAC >0), the coefficient of DAC*GROW is 0.180 ($t = 2.33$). This indicates a higher sensitivity between R and DAC in growing firms: a slope of 0.482 (=0.302 + 0.180) for high MB firms versus 0.302 for low MB firms. In model 3 (DAC <0), the coefficient of DAC*GROW is −0.476 ($t = 4.49$). This indicates a lower sensitivity between R and DAC in growing firms: a slope of −0.188 (=0.288 − 0.476) for high MB firms versus 0.661 for low MB firms. These results are mostly consistent with those presented in Table 4, particularly concerning positive discretionary accruals. The result concerning negative discretionary accruals appears anomalous: the negative slope (−0.188) implies a positive impact on returns; the greater the negative value of the discretionary accrual, the greater the positive impact on returns.

To mitigate the cross-correlation problem and the bias in the standard errors of regression slopes that arise because the residuals are correlated across years, in Panel B of Table 5, we use a Fama–Macbeth (1973) method to test the robustness of our results. In model 1, the coefficient of DAC*GROW is −0.007 ($t = 0.12$). In contrast, in model 2 (DAC >0), the coefficient of DAC*GROW is 0.250 ($t = 2.46$), and in model 3 (DAC <0), the coefficient of DAC*GROW is −0.405 ($t = 3.74$). Once again, these results are mostly consistent with those presented in Table 4, particularly concerning positive discretionary accruals. The negative slope of DAC for growing firms (slope = 0.169 − 0.405 = −0.336) in model 3 remains an anomaly as in the fixed effect regression.

In addition, we employ firm clustering to adjust standard errors in order to deal with the above issue. In untabulated results, we find that our results are robust to this test. Finally, we investigate whether our result is driven by outliers as well. We perform a median regression that estimates the effect of explanatory variables on the median stock returns, conditional on the values of explanatory variables. The untabulated results are similar to those from the average response regression (OLS) in Table 4. We conclude that our results are not driven by outliers.

4.2.2 Alternative measures of discretionary accruals

Misspecification of the accruals model is a common concern in most earnings management studies (Bernard and Skinner 1996). Kothari et al. (2005) point out that the existing models of estimating discretionary accruals are biased toward detecting earnings management when the event related to the incentive is associated with performance, and they recommend the use of a performance adjusted discretionary accrual model to overcome the problem. More recently, Collins et al. (2011) argue that nondiscretionary working capital accruals are related to firm growth thereby necessitating the use of both firm growth and firm performance as additional controls in the Jones model. In tests reported in this section, we follow these recommendations, first by using ROA as an additional control in the first stage of the Jones model and later by using both ROA and firm growth as additional controls.

Panel A of Table 6 reports results obtained by using performance matched discretionary accruals. We find that the results are largely similar to those obtained using the cross-sectional Jones model. For example, in model 2 (DAC >0), the coefficient of DAC*-GROW is 0.307 ($t = 4.62$), indicating a higher pricing sensitivity consistent with Hypothesis 2. In model 3 (DAC <0), the same coefficient is negative, implying a lower pricing sensitivity. The results imply that even after taking firm performance into consideration while calculating discretionary accruals, positive discretionary accruals continue to exhibit a relatively stronger informational role in high-growth firms compared to low-growth firms.

Panel B of Table 6 reports results obtained by considering both performance and growth (that is, using controls for ROA and MB) while calculating discretionary accruals. We find that the results are unchanged and supported the conclusions made earlier. In sum, the

Table 6 Robustness checks: Alternative measures of discretionary accruals

	(1) Full sample	(2) DAC >0	(3) DAC <0
Panel A: Using performance matched discretionary accruals			
OCF	0.502***	0.484***	0.530***
	[22.89]	[15.16]	[17.17]
NDAC	0.450***	0.498***	0.353***
	[11.73]	[9.76]	[5.73]
DAC (Performance matched)	0.209***	0.183***	0.186***
	[45.00]	[25.33]	[17.16]
High-MB firms	0.455***	0.404***	0.462***
	[12.07]	[6.76]	[5.99]
DAC(Performance matched)* High-MB firms	0.047	0.307***	−0.274***
	[1.14]	[4.62]	[−2.86]
Control for			
Industry effect	Y	Y	Y
Year effect	Y	Y	Y
Observations	41,023	22,763	18,260
Adjusted R-squared	0.18	0.17	0.19
Panel B: Using performance and growth matched discretionary accruals			
OCF	0.494***	0.473***	0.521***
	[22.53]	[14.79]	[16.92]
NDAC	0.431***	0.477***	0.330***
	[11.24]	[9.36]	[5.38]
DAC (Performance and growth matched)	0.212***	0.188***	0.184***
	[45.72]	[26.00]	[17.00]
High-MB firms	0.436***	0.378***	0.430***
	[11.55]	[6.33]	[5.56]
DAC(Performance and growth matched)* High-MB firms	0.031	0.285***	−0.315***
	[0.76]	[4.29]	[−3.29]
Control for			
Industry effect	Y	Y	Y
Year effect	Y	Y	Y
Observations	41,023	22,763	18,260
Adjusted R-squared	0.18	0.17	0.19

This table provides a robustness check on the relation between stock returns and earnings components conditional on firm growth using Kothari et al. (2005) performance matched discretionary accruals (Panel A) and Collins et al. (2011) performance and growth matched discretionary accruals. The dependent variable is Returns (R), which is the cumulative annual stock return measured over a twelve-month period ending 4 months after the fiscal year end. Total accruals (ACCR) is the difference between Net income (NI) and Operating cash flow (OCF). Net income (NI) is net income before extraordinary items and discontinued operations. Operating cash flow (OCF) is obtained from the Compustat item operating activities-net cash flow. Non-discretionary accruals (NDAC) and Discretionary accruals (DAC) are determined using Kothari et al. (2005) performance matched discretionary accruals model. All above variables are deflated by total assets at the beginning of the period. High-MB firms is a dummy variable which is one if the market to book (MB) of a firm is above the median value of market to book (MB). MB is the ratio of market value of equity to book value of equity. Absolute values of heteroskedasticity robust *t* statistics are in parentheses. Significance at the 10, 5, and 1 % levels is indicated by *, **, and ***, respectively results in Table 6 mitigate the misclassification concern in the Jones model (e.g., Bernard and Skinner 1996) and provide further support to our Hypothesis 2.

4.2.3 Alternate measures of firm growth

Although market-to-book is a common proxy for growth, some other proxies have been used in the literature. To check the robustness of our results, we consider two alternate proxies, price-earnings ratio (PE) and sales growth, also commonly used in finance and accounting literature (e.g., Skinner 1993; Lang et al. 1996). Table 7 Panel A provides results when the PE ratio is used as the proxy for growth. Overall, the results are unchanged from those reported in Table 4. The R-squares are slightly lower (about 15 % in Table 7 compared to about 18 % in Table 4). The coefficients of DAC*-GROW in this table are in line with those reported in Table 4. The coefficient values for the full, DAC >0, and DAC <0 samples are −0.009 ($t = 0.22$), 0.200 ($t = 2.95$), and −0.439 ($t = 4.57$) respectively. The pricing sensitivity of positive discretionary accruals in high-PE firms is 0.790 (=0.590 + 0.200); in low-PE firms, it is −0.042 (=0.387 − 0.439). The latter result is anomalous because the slope is negative but the value is close to zero.

Table 7 Panel B provides results when the sales growth rate is used as a proxy for growth. The R-squared values of about 16 % are in line with those in Panel A. Overall, when compared to the results of Panel A, the results of Panel B are closer to the results of Table 4. Specifically, model 2 (DAC >0) confirms Hypothesis 2 (coefficient of DAC*-GROW is significantly positive), and model 1 (full sample) fails to confirm Hypothesis 1 (coefficient of DAC*GROW is insignificant). Also, model 3 (DAC <0) does not indicate an anomalous pricing sensitivity of discretionary accruals for growing firms: the slope is 0.250 (=0.502 − 0.252).

4.2.4 Other robustness checks

An alternative way to examine the misclassification problem in the Jones model is to interact firm growth with DAC and NDAC simultaneously. In untabulated results, we find insignificant coefficients of the interactions between firm growth and NDAC in both the positive DAC and the negative DAC subsamples. The results further mitigate the concern related to the misspecification of discretionary accruals.

Prior studies show that managers use dividends to signal private information to outsiders (e.g., Miller and Rock 1985; John and Williams 1985). We run a robustness check by adding dividends as an additional control in the main regression model. We find our results hold after this additional control. For brevity, we do not tabulate the results.

Our final set of robustness checks involve the use of reduced samples. We first rerun the regressions in Table 4 using a sample in which finance companies (SIC codes 6000–6999) and utilities companies (SIC codes 4900–4949) are excluded. Next, we rerun the regressions by excluding the period associated with the financial crisis (years 2008–2009). For brevity, we do not tabulate these results. But both results confirm our earlier results. Specifically, the coefficient of DAC*GROW is insignificant in the full sample and significantly positive in the DAC >0 sample. These results are consistent with Hypothesis 2.

Table 7 Robustness checks: Alternative measures of firm growth

	(1) Full sample	(2) DAC >0	(3) DAC <0
Panel A: Using price-earnings ratio as the proxy for firm growth			
OCF	0.404***	0.396***	0.418***
	[19.22]	[13.34]	[13.71]
NDAC	0.427***	0.526***	0.224***
	[11.65]	[10.78]	[3.81]
DAC	0.470***	0.590***	0.387***
	[14.07]	[10.16]	[5.90]
High-PE firms	0.097***	0.073***	0.081***
	[20.88]	[9.14]	[8.79]
DAC* High-PE firms	−0.009	0.200***	−0.439***
	[0.22]	[2.95]	[4.57]
Control for			
Industry effect	Y	Y	Y
Year effect	Y	Y	Y
Observations	41,023	22,763	18,260
Adjusted R-squared	0.15	0.14	0.16
Panel B: Using sales growth rate as the proxy for firm growth			
OCF	0.453***	0.431***	0.488***
	[22.22]	[14.68]	[16.79]
NDAC	0.387***	0.416***	0.306***
	[10.58]	[8.26]	[5.37]
DAC	0.452***	0.472***	0.502***
	[12.68]	[7.69]	[7.55]
High-sales growth firms	0.131***	0.113***	0.112***
	[27.61]	[13.83]	[11.78]
DAC* High-sales growth firms	0.013	0.166**	−0.252***
	[0.30]	[2.39]	[2.66]
Control for			
Industry effect	Y	Y	Y
Year effect	Y	Y	Y
Observations	41,023	22,763	18,260
Adjusted R-squared	0.16	0.15	0.17

This table provides robustness checks on the relation between stock returns and earnings components conditional on firm growth using alternative measures of firm growth. Panel A and B report OLS regression results using price-earnings ratio and sales growth rates as alternative measures of firm growth, respectively. The dependent variable is Returns (R), which is the cumulative annual stock return measured over a twelve-month period ending 4 months after the fiscal year end. Total accruals (ACCR) is the difference between Net income (NI) and Operating cash flow (OCF). Net income (NI) is net income before extraordinary items and discontinued operations. Operating cash flow (OCF) is obtained from the Compustat item operating activities-net cash flow. Non-discretionary accruals (NDAC) and Discretionary accruals (DAC) are determined using the cross-sectional variation of the Jones (1991) model. All above variables are deflated by total assets at the beginning of the period. High-PE firms is a dummy variable which is one if the PE ratio of a firm is above the median value of PE ratio. High-sales growth firms is a dummy variable which is one if the sales growth rate of a firm is above the median value of sales growth rate. PE ratio is the price-earnings ratio, and sale growth rate is the average sale growth rate of the last 3 years. Absolute values of heteroskedasticity robust *t* statistics are in parentheses. Significance at the 10, 5, and 1 % levels is indicated by *, **, and ***, respectively

4.3 Discretionary accruals as predictors of future performance

Our previous tests focused on the pricing of discretionary accruals or the contemporaneous link between returns and discretionary accruals. Tests of our hypotheses are also possible by focusing on future performance instead of contemporaneous returns. If high-growth firms use discretionary accruals relatively more to signal performance, then there should be a relatively greater link between discretionary accruals and metrics capturing future performance such as future earnings, future cash flows, and future dividend changes. Indeed, Subramanyam (1996) applies these tests in the general setting; we adapt these tests to focus on whether growth conditions these relationships. Tests of future performance have an additional purpose: they could help rule out management opportunism/market mispricing as an alternative explanation to the previously reported results concerning the pricing of discretionary accruals.

4.3.1 Discretionary accruals and future earnings and cash flows

We first examine the direct link between current discretionary accruals, positive and negative discretionary accruals and future earnings and cash flows. Following Kraft et al. (2007), we estimate the following model:

$$
\begin{aligned}
NI_{+}(OCF_{+}) &= \alpha_0 + \alpha_1 GROW + \alpha_2 OCF + \alpha_3 NDAC + \alpha_4 DAC + \alpha_5 GROW * DAC + \alpha_6 R \\
&+ \alpha_7 SALES + \alpha_8 \Delta SALES + \alpha_9 CAPEX + \alpha_{10} \Delta CAPEX + \Sigma\alpha_k SizeDecile + \Sigma\alpha_k B/PDecile \\
&+ \Sigma\alpha_k \Pr iceDecile + \varepsilon_{+}
\end{aligned} \tag{3}
$$

where the dependent variable is the 1-year ahead earnings or cash flows (NI_+ or OCF_+). In addition to the main test variables discussed earlier, we add stock returns (R), the level and change in sales (SALES and ΔSALES), and the level and change in capital expenditures (CAPEX and Δ CAPEX). We also include variables to capture the market value of equity (Size Decile), the book-to-price ratio (B/P Decile), and the stock price (Price Decile). As Kraft et al. (2007) indicate, the inclusion of these additional explanatory variables produces a more robust specification of the model. Results using these dependent variables are reported in Panel A (future earnings) and Panel B (future cash flows) of Table 8.[12]

Results in Panel A and B of Table 8 are consistent with both Hypotheses 1 and 2. In model 1 (full sample) of Table 8 Panel A, we find that all three components of earnings, OCF, NDAC and DAC, are positively associated with forward 1-year NI. Additionally, DAC*GROW, equals 0.045 and is significant at the 1 % level, indicating that discretionary accruals of high-growth firms contain more private information about firm future profitability than that of low-growth firms. This evidence is consistent with Hypothesis 1. When we separate discretionary accruals into positive and negative categories, we find that the positive association between discretionary accruals and forward 1-year earnings holds only for positive discretionary accruals, but not negative discretionary accruals. This evidence is consistent with Hypothesis 2.[13]

[12] We also run Eq. 3 using the Fama–Macbeth and Nonlinear maximum likelihood methods, and the results are similar to OLS results.

[13] The results are similar when we use two-year-ahead earnings or two-year-ahead cash flows as the dependent variable.

Table 8 Regression of future performance on current earnings components conditional on firm growth

	(1) Full sample	(2) DAC >0	(3) DAC <0
Panel A: Regressions of 1-year-ahead earnings			
OCF	0.568***	0.590***	0.553***
	[47.68]	[74.38]	[67.90]
NDAC	0.320***	0.361***	0.264***
	[20.02]	[28.57]	[17.09]
DAC	0.334***	0.358***	0.274***
	[24.28]	[20.44]	[12.52]
High-MB firms	0.006*	0.005*	0.008*
	[1.69]	[1.65]	[1.71]
DAC*High-MB firms	0.045***	0.059***	0.034
	[3.23]	[2.87]	[1.23]
R	0.015***	0.017***	0.013***
	[6.53]	[7.42]	[4.97]
Sales	0.027***	0.029***	0.025***
	[18.04]	[19.69]	[15.55]
ΔSales	0.010***	0.011***	0.012***
	[2.92]	[3.19]	[3.02]
CAPEX	0.097***	0.116***	0.075***
	[5.97]	[7.04]	[4.15]
ΔCAPEX	−0.067***	−0.086***	−0.045**
	[3.26]	[4.31]	[2.02]
Control for			
Size Decile, B/P Decile, Price Decile	Y	Y	Y
Industry and year effects	Y	Y	Y
Observations	36,741	20,634	16,107
Adjusted R-squared	0.37	0.35	0.39
Panel B: Regressions of 1-year-ahead operating cash flows			
OCF	0.414***	0.426***	0.398***
	[74.50]	[53.23]	[50.87]
NDAC	0.153***	0.165***	0.140***
	[16.38]	[10.82]	[11.34]
DAC	0.175***	0.129***	0.188***
	[17.20]	[6.04]	[11.0]8
High-MB firms	0.002	0.003	0.009**
	[0.85]	[0.61]	[2.25]
DAC*High-MB firms	−0.001	0.066**	−0.034*
	[0.10]	[2.45]	[1.71]
All other controls	Y	Y	Y
Observations	33,539	14,480	19,059
Adjusted R-squared	0.29	0.34	0.26
Panel C: Regressions of 1-year-ahead stock returns			
OCF	0.084***	0.098***	0.066***
	[4.90]	[4.01]	[2.70]
NDAC	−0.132***	−0.118**	−0.137***
	[4.18]	[2.32]	[3.24]
DAC	−0.235***	−0.307***	−0.051
	[6.83]	[4.27]	[0.88]

Table 8 continued

	(1) Full sample	(2) DAC >0	(3) DAC <0
High-MB firms	0.018* [1.85]	0.030* [1.86]	0.026* [1.82]
DAC*High-MB firms	0.113*** [2.81]	0.270*** [2.92]	−0.032 [0.46]
All other controls	Y	Y	Y
Observations	36,741	16,107	20,634
Adjusted R-squared	0.10	0.11	0.08

This table provides OLS regression results on the relation between current earnings components and future performance. We use 1-year-ahead earnings, operating cash flows, and stock return as proxies for future performance in Panel A, B, and C, respectively. Net income (NI) is net income before extraordinary items and discontinued operations. Total accruals (ACCR) is the difference between Net income (NI) and Operating cash flow (OCF). Operating cash flow (OCF) is obtained from the Compustat item operating activities-net cash flow. Non-discretionary accruals (NDAC) and Discretionary accruals (DAC) are determined using the cross-sectional variation of the Jones (1991) model. R is the cumulative annual stock returns measured over a twelve-month period ending 4 months after the fiscal year end. Sales and ΔSales are the level and the change in sales. CAPEX and ΔCAPEX are the level and change of capital expenditures. We also include variables to capture market value of equity (Size Decile), book-to-price (B/P Decile), and stock price (Price Decile). All above variables are deflated by total assets at the beginning of the period. High-MB firms is a dummy variable which is one if the market to book (MB) of a firm is above the median value of market to book (MB). MB is the ratio of market value of equity to book value of equity. Absolute values of heteroskedasticity robust *t* statistics are in parentheses. Significance at the 10, 5, and 1 % levels is indicated by *, **, and ***, respectively. For brevity, some of the control variables are not reported in Panels B and C

Panel B of Table 8 reports results of using 1-year ahead operating cash flows as the proxy for future performance. For brevity, we do not report coefficients of the additional controls. The results are more similar to those in Table 4 than to those in Panel A of Table 8: there is support for Hypothesis 2 only. Nevertheless, we note that the coefficient of DAC*GROW is significantly positive for the DAC >0 sample.

4.3.2 Discretionary accruals and future stock returns

We consider future stock returns as an additional performance metric and report results in Panel C of Table 8 (for brevity, we report only the key variables as in Panel B). Prior studies report a negative relation between discretionary accruals and future stock returns implying that investors overprice discretionary accruals in the current period (e.g., Xie 2001; Kraft et al. 2007; Li 2011). Consistent with this prior evidence, we find a positive coefficient of OCF and negative coefficients of both NDAC and DAC, indicating that investors underweight cash flows and overweight accruals (including both discretionary and non-discretionary accruals). Nevertheless, we find that the coefficient of DAC*GROW is significantly positive, indicating that the overpricing of discretionary accruals is less significant for high-growth firms. When we separate discretionary accruals into positive and negative categories, we further find that overpricing problem for positive discretionary accruals is less significant for high-growth firms.

4.3.3 Discretionary accruals and future dividend changes

The signaling role of dividends is well-established in the literature (e.g., Miller and Rock 1985; John and Williams 1985). Following Subramanyam (1996), we further examine the relation between discretionary accruals and both current and future dividend changes. We first construct a dummy variable, dividend increase, which equals one if dividend increases in the current year (next year) compared to the previous year (current) year. Then we use logit regressions to examine the relation between dividend increase and discretionary accruals.

Panels A and B of Table 9 report the results when we use current dividend increase and 1-year-ahead dividend increase as dependent variables, respectively. Consistent with our expectations, we find that the interaction term of DAC*GROW is positive and significant for positive discretionary firms for both panels, while it is negative or insignificant for negative discretionary firms. Since dividends are known to signal private information concerning the value of the firm, the link between dividend changes and discretionary accruals in high-growth firms further confirms the signaling role played by discretionary accruals and adds to tests involving returns.

4.4 The moderating effect of information quality

So far our tests provide overwhelming evidence in support of Hypothesis 2. We now consider the possibility that managers in high-growth firms convey their private information through other signaling mechanisms. This would suggest that the role of positive discretionary accruals varies with the use of other mechanisms. In other words, the information environment, whether it is stronger or weaker, could impact signaling with discretionary accruals. Therefore, we expect a stronger (weaker) role for discretionary accruals in situations with higher (lower) information asymmetry. To test this conjecture, we use different measures to capture information quality of the firms and test whether the information role of positive discretionary accruals is less important for firms with higher information quality than for firms with lower information quality.

We use three measures of information quality. Our first measure is PIN which is the probability of informed trading. We estimate PIN using the Easley et al. (2002) model. We use the sample median value of PIN to create two subgroups and run our main regressions for positive discretionary accruals for these two subsamples separately. The results are reported in Panel A of Table 10. We find that for firms with high information asymmetry, the coefficient of DAC*GROW is 0.309 and is significant at the 5 % level, while it is not significant for firms with low information asymmetry. The coefficient of positive DAC for high-growth firms with high information asymmetry is 0.616 (=0.307 + 0.309), while it is 0.409 for high-growth firms with low information asymmetry. The results are consistent with our expectation and show that the role of positive discretionary accruals is more important for high-growth firms with higher information asymmetry than for high-growth firms with lower information asymmetry.

Panel B reports results using analyst forecast accuracy as a proxy for information quality. Analyst forecast accuracy is the standard deviation of analysts' forecasts deflated by actual earnings.[14] As with the previous proxy, we separate our sample into two subsamples based on the median value. We find similar results. We find that the information role of positive discretionary accruals is more important for high-growth firms with low

[14] The results are similar when we use analyst forecast errors as the measure of analyst forecast accuracy.

Table 9 Logit regression of current and future dividend changes on current earnings components conditioned on firm growth

	(1) Full sample	(2) DAC >0	(3) DAC <0
Panel A: Regressions of current-year dividend changes			
OCF	4.162***	4.467***	4.156***
	[36.38]	[27.07]	[23.90]
NDAC	1.549***	−0.007	4.118***
	[8.86]	[0.03]	[13.23]
DAC	1.694***	7.693***	−2.253***
	[9.64]	[16.32]	[7.02]
High-MB firms	−0.03	−0.149***	−0.167***
	[1.12]	[3.11]	[3.04]
DAC* High-MB firms	0.689***	1.801***	−1.465**
	[3.21]	[4.43]	[2.55]
Control for			
Industry effect	Y	Y	Y
Year effect	Y	Y	Y
Observations	40,950	22,714	18,224
Pseudo R-squared	0.12	0.13	0.14
Panel B: Regressions of 1-year-ahead dividend changes			
OCF	3.116***	3.424***	2.832***
	[30.29]	[22.82]	[18.82]
NDAC	1.030***	0.009	2.547***
	[6.24]	[0.04]	[9.07]
DAC	1.210***	4.646***	−1.392***
	[7.36]	[11.47]	[4.73]
High-MB firms	−0.089***	−0.180***	−0.078
	[3.43]	[3.84]	[1.48]
DAC* High-MB firms	0.271	0.757*	−0.019
	[1.31]	[1.95]	[0.04]
Control for			
Industry effect	Y	Y	Y
Year effect	Y	Y	Y
Observations	41,021	22,759	18,253
Pseudo R-squared	0.08	0.09	0.08

This table provides Logit regression results on the relation between current earnings components and current/future dividend changes conditional on firm growth. Panel A and B report results using current dividend changes and 1-year-ahead dividend changes as dependent variables, respectively. Dividend changes is a dummy variable which equals one if there is increase in dividend per share in the current year (or 1-year ahead as the case may be), and zero otherwise. Total accruals (ACCR) is the difference between Net income (NI) and Operating cash flow (OCF). Net income (NI) is net income before extraordinary items and discontinued operations. Operating cash flow (OCF) is obtained from the Compustat item operating activities-net cash flow. Non-discretionary accruals (NDAC) and Discretionary accruals (DAC) are determined using the cross-sectional variation of the Jones (1991) model. All above variables are deflated by total assets at the beginning of the period. High-MB firms is a dummy variable which is one if the market to book (MB) of a firm is above the median value of market to book (MB). MB is the ratio of market value of equity to book value of equity. Absolute values of Z-statistics are in parentheses. Significance at the 10, 5, and 1 % levels is indicated by *, **, and ***, respectively

Table 10 The moderating effect of information quality

	(1) DAC >0 High information asymmetry	(2) DAC >0 Low information asymmetry
Panel A: Using PIN as the proxy for information asymmetry		
OCF	0.380***	0.520***
	[8.10]	[9.81]
NDAC	0.459***	0.401***
	[5.49]	[4.48]
DAC	0.307**	0.409***
	[2.43]	[3.44]
High-MB firms	0.241***	0.174***
	[11.89]	[10.76]
DAC* High-MB firms	0.309**	0.007
	[2.11]	[0.06]
Industry and year effects	Y	Y
Observations	4,697	4,291
Adjusted R-squared	0.18	0.24
Panel B: Using Analyst forecast accuracy as the proxy for information asymmetry		
OCF	0.508***	0.285***
	[9.12]	[5.05]
NDAC	0.549***	0.489***
	[5.35]	[5.20]
DAC	0.291**	0.372**
	[2.19]	[2.54]
High-MB firms	0.195***	0.204***
	[9.36]	[9.95]
DAC* High-MB firms	0.421***	0.132
	[2.69]	[0.85]
Industry and year effects	Y	Y
Observations	3,288	3,505
Adjusted R-squared	0.17	0.17
Panel C: Using Auditor quality (Big N) as the proxy for information asymmetry		
OCF	0.597***	0.393***
	[9.95]	[17.59]
NDAC	0.782***	0.411***
	[8.49]	[10.29]
DAC	0.628***	0.417***
	[4.40]	[7.67]
High-MB firms	0.182***	0.183***
	[6.89]	[21.44]
DAC*High-MB firms	0.244***	0.277***
	[2.82]	[4.27]
Industry and year effects	Y	Y

Table 10 continued

	(1) DAC >0 High information asymmetry	(2) DAC >0 Low information asymmetry
Observations	3,019	19,702
Adjusted R-squared	0.18	0.18

This table provides OLS regressions on the moderating effect of firm information quality on the relation between stock returns and positive discretionary accruals. The dependent variable is Returns (R), which is the cumulative annual stock returns measured over a twelve-month period ending 4 months after the fiscal year end. Total accruals (ACCR) is the difference between Net income (NI) and Operating cash flow (OCF). Net income (NI) is net income before extraordinary items and discontinued operations. Operating cash flow (OCF) is obtained from the Compustat item operating activities-net cash flow. Non-discretionary accruals (NDAC) and Discretionary accruals (DAC) are determined using the cross-sectional variation of the Jones (1991) model. All above variables are deflated by total assets at the beginning of the period. High-MB firms is a dummy variable which is one if the market to book (MB) of a firm is above the median value of market to book (MB). MB is the ratio of market value of equity to book value of equity. Three measures of information quality are used as follows. PIN is the probability of informed trading estimated using Easley et al. (2002). Analyst forecast accuracy is the standard deviation of analysts' forecasts deflated by actual earnings. Big N auditors are defined as auditors with the audit code (Compustat item AU) between 1 and 8. Absolute values of heteroskedasticity robust *t* statistics are in parentheses. Significance at the 10, 5, and 1 % levels is indicated by *, **, and ***, respectively

analyst forecast accuracy (coefficient = 0.712) than for high-growth firms with high analyst forecast accuracy (coefficient = 0.372).

Our final proxy for information quality is auditor quality. Krishnan (2003) finds that auditor quality is an important factor in the pricing of discretionary accruals. In Panel C, we test whether auditor quality affects the pricing of positive discretionary accruals for high-growth firms. Following Krishnan (2003), we use Big N as the measure of auditor quality. Big N auditors are defined as auditors with the audit code (Compustat item AU) between 1 and 8. We separate sample into two groups based on whether a firm is audited by a Big N auditor. Panel C of Table 10 shows that the coefficient of positive DAC for high-growth firms without Big N auditors is 0.872 (=0.628 + 0.244), while it is 0.694 (=0.417 + 0.277) for high-growth firms with Big N auditors.

5 Conclusion

The managerial use of discretionary accruals is a much-researched topic in accounting. Yet, despite the overwhelming evidence concerning the informativeness of earnings overall, and despite early conceptual understanding of positive as well negative managerial uses of discretionary accruals, few empirical studies directly address the beneficial role of discretionary accruals in performance signaling. Subramanyam (1996) is an exception. We adapt the methodology in Subramanyam to study the use of discretionary accruals in a scenario usually characterized by high levels of information asymmetry and agency costs and one in which there is a high demand for information. Specifically, we seek to understand whether high-growth firms use discretionary accruals to a greater extent than low-growth firms. Our tests focus not on the level of discretionary accruals, but on their pricing and link to future performance.

Using a large sample of more than 40,000 firm years spanning the period 1987–2009, we find that in the aggregate, high-growth firms do not exhibit differential behavior as regards the pricing of discretionary accruals. However, we find that high-growth firms do exhibit differential behavior concerning *positive* discretionary accruals. Our tests reveal that positive discretionary accruals of high-growth firms are priced relatively higher than those of low-growth firms. These tests are robust with respect to alternative model specifications (firm-year fixed-effect regressions, Fama–Macbeth regressions), alternative proxies for discretionary accruals (performance matched model and performance and growth matched model), alternative proxies for growth (price-earnings ratio, sales growth) and alternative samples (exclusion of financial services firms, exclusion of financial crisis period). Furthermore, in corroboration with pricing results, we find that the link between current period positive discretionary accruals and future performance (future earnings, future cash flows and future dividend changes) is relatively stronger for high-growth firms. Finally, we find the information role of positive discretionary accruals is enhanced if a firm has a higher level of information asymmetry.

Our study contributes by offering a counterpoint to the earnings management literature and by validating the positive role of discretionary accruals. Earlier, Holthausen (1990) identified the performance signaling role of discretionary accruals along with their efficient contracting and managerial opportunism roles. Our results provide a large sample validation of the performance signaling role. Our paper differs from Subramanyam (1996) in that we identify a subsample (high-growth firms) for which the performance signaling role is arguably stronger and report results consistent with this expectation. In doing so, we also respond to the call in Guay et al. (1996) to conduct studies of discretionary accruals by identifying subsamples in which managerial incentives can be ascertained.

Nonetheless, we acknowledge that the results of our paper should be considered in the context of the study's inherent limitations. First, as Subramanyam (1996) point out, the pricing of discretionary accrual is a joint test of the nature of discretionary accruals and market efficiency. Although we try to specify a scenario which could help us capture better the informational role of discretionary accruals, we acknowledge that we could not totally rule out the market mispricing explanation. Second, measurement error in accruals models is a common concern in most earnings management studies. Although we attempt to ensure that the measurement error in the discretionary accruals proxy is not driving the results, we cannot totally address this measurement error issue.

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