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A Servant to Many Masters: Competing Shareholder Preferences and Limits to Catering

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Abstract

We study what determines catering through the payout policy and how catering affects firm value. We create a catering index, measuring how the firm caters to its investors' payout preferences. The index is based on the revealed payout preferences of mutual funds holding the firm's stocks. Catering is constrained by market segmentation and dispersion in investor payout preferences. It is also associated with positive value effects: Firms increasing their catering index also experience an increase in value. Furthermore, greater catering ability is associated with a more positive market reaction to corporate announcements of equity issues and dividend payouts.

I. Introduction

We study the determinants of catering through the payout policy and assess its value. In a Modigliani-Miller world, payout policy does not affect firm value: Investor "clienteles" can adjust to it, leaving firm value unchanged. While this has long been the dominant paradigm, growing evidence suggests that "managers cater to investors by paying dividends when investors put a stock price premium on [dividend] payers and not paying when investors prefer non-payers" (Baker and Wurgler (2004)). However, as yet there is no evidence on what constrains the ability of the firm to cater and on the value implications of the firm's ability to cater to a greater or lesser extent. In this paper, we focus on these issues and ask two core questions: What limits catering? What is the impact of catering on firm value?

We provide an answer to the first question by studying how the firm's ability to cater to its shareholders' payout preferences is affected by investor heterogeneity and market segmentation. We argue that dispersion in investor payout

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preferences makes it harder for the firm to cater to the conflicting demands of its shareholders through a one-size-fits-all payout policy. This would not be a problem in deep, integrated markets, where the disappointed shareholders can be easily replaced by more like-minded investors (Black and Scholes (1974)). Market segmentation, however, can limit the ability of the investors to liquidate their holdings, and thus restrict the pool of potential shareholders available to the firm, leaving it unable to cater.

To illustrate this point, let us compare two firms utilizing two different investment styles (e.g., "value" and "growth").[1] Suppose that all the potential value investors have the same type of preferences (e.g., they prefer dividend payers). In the growth style, on the other hand, there is wide investor heterogeneity: Some investors prefer dividend-paying stocks, while others prefer nondividend-paying stocks. Catering is easy for the *value* firm: It simply needs to pay dividends. In contrast, for the *growth* firm, it is impossible to meet the competing demands of all its potential investors. It is forced to disappoint a significant part of its pool of investors, regardless of the payout policy it actually adopts. At the same time, the segmentation of the market in investment styles makes it harder for *value* investors to replace the disappointed *growth* ones. That is, the combination of market segmentation and heterogeneous investor preferences gives rise to limits to the ability to cater. Limits to catering reduce the incentives to comply with investor payout preferences, as the benefits in terms of the potential pool of capital are lower and also reduce the ability to do so.

We then turn to the second question: What does catering imply for the value of the firm? Answering this question requires looking at how the firm exploits the positive effects generated by its ability to cater, in terms of corporate policies that can have an effect on firm value. While there is some evidence that payout policy has an impact on the stock price (Baker and Wurgler (2004), Li and Lie (2006)), the relationship between catering and firm policies other than payout has not been studied directly. Analyzing this problem is far from trivial, as the decision of the firm to comply with its shareholders' preferences is endogenous. Any link between catering and firm policies is likely to be contaminated by spurious correlation. However, by building on the previous argument, we can address this endogeneity issue by using the limits to catering as an exogenous identifying restriction.

We argue that, by catering through the payout policy, the managers increase the alignment between the firm and its shareholders, thus increasing their willingness to accept and share the firm's strategic choices. This should grant the firm cheaper access to equity financing (Boot and Thakor (2005), Dittmar and Thakor (2007)). We therefore expect the market to charge a lower discount on the stocks of the firms that are better able to cater, and to receive their announcements of issuance and payout decisions more favorably.

We bring these intuitions to the data, using information on mutual fund stock holdings to create a catering index. Three main reasons justify our focus on

[1]We refer to these two styles, as they reflect a relatively "exogenous" style classification. For example, Morningstar classifies mutual funds using a "style box" based on categories such as value and growth; moreover, Russell and BARRA have indices that track the value and growth styles.

mutual funds. First, institutional investors, and mutual funds especially, are the main players in the market, and the literature has linked their portfolio choices to payout policy (e.g., Falkenstein (1996), Grinstein and Michaely (2005)). Second, since they pass their portfolio gains on to terminal investors, mutual funds provide a good proxy for the actual terminal investor preference for a specific payout policy. Third, mutual funds are linked to well-defined investment styles (i.e., they operate in a style-segmented market).[2]

We start by identifying investor payout preferences. Using a "revealed preference" argument as in Graham and Kumar (2006), we define a mutual fund's target payout policy as the average payout that the fund receives from the stocks in its portfolio. We then construct a catering index, defined as the negative absolute difference between the firm's actual payout ratio and the average target payout of its shareholders. The index gauges how close the firm's payout policy is to the payout preferences of its main institutional shareholders.

We also relate the catering index to the limits to catering. Our main proxy for limits to catering is the dispersion in investor payout preferences within the firm's investment style (based on size and book-to-market ratio). This proxy combines the two elements of limits to catering: heterogeneity in payout demands and market segmentation. Moreover, given that this variable is based on payout policies aggregated at the investment-style level, it is unlikely to be affected by the policy of the individual firm and/or the preferences of the individual fund, and it therefore provides an exogenous driver of catering.

In line with our working hypothesis, we find a strong, negative relationship between the catering index and limits to catering. A 1-standard-deviation increase in the dispersion of desired payouts leads to a decrease in the catering index by between 1% and 7%. This effect is not only economically meaningful, but also statistically significant and robust to controlling for alternative potential determinants of catering, such as financial constraints, the quality of corporate governance, or mutual fund control. Also, while catering is associated with a greater investment flow into the firm by mutual funds, mutual fund holdings have only a modest impact on the firm's catering index.

We then relate catering to firm value. Our findings suggest that firms that cater to investor payout preferences are better perceived by the market. A portfolio long in the stocks of firms that increase their catering index and short in the stocks of firms that decrease their catering index earns up to a 7% yearly return, net of risk. This effect is more pronounced when market participants in general appear to attach greater importance to the payout policy (e.g., during periods when the Baker and Wurgler (2004) "dividend premium" is higher).

Furthermore, we find that the more positive market perception of firms that cater translates into a more favorable market reaction to their corporate announcements. Firms that cater more experience a smaller stock price drop when they issue equity. A 10% increase in the catering index results in up to 9 basis points (bp) higher return around the issue announcement date, or a 9% improvement relative to the average announcement return of −0.73 percentage points.

[2]Evidence of this is the existence of practitioner tools such as the Morningstar mutual fund "style box," as well as the findings of Froot and Teo (2004) or Cooper, Gulen, and Rau (2005).

Finally, catering is also rewarded by the market when the firm announces dividend payments. In particular, we find that changes in dividends that increase the coherence between the firm's payout policy and the target payout demanded by the investors (i.e., changes that increase the catering index) are rewarded by the market with an announcement return between 56 bp and 128 bp higher than for the average dividend increase, suggesting that the impact of catering, while not unreasonably large, is economically nonnegligible.

Our findings provide a number of new insights. First, they contribute to the literature on dividends and payout policy. The classic Miller and Modigliani (1961) proposition posits that payout policy does not affect firm value. Baker and Wurgler (2004) relax the assumption of frictionless markets and argue that "for either psychological or institutional reasons, some investors have an uninformed, time-varying demand for dividend-paying stocks.... Arbitrage fails to prevent this demand from driving apart the prices of stocks that do and do not pay dividends." The main prediction is that the propensity to pay dividends depends on a measurable dividend premium in stock prices. Our contribution is to identify a source of limits to catering, which affects the ability to cater to the shareholders through payout policy. In particular, we link the time-series and cross-sectional variations in catering to heterogeneous investor preferences and limits of arbitrage (Shleifer and Vishny (1997), Barberis and Shleifer (2003), and Barberis, Shleifer, and Wurgler (2005)).

Second, we contribute to the growing literature on dividend clienteles (e.g., Elton and Gruber (1970), Allen, Bernardo, and Welch (2000), Hotchkiss and Lawrence (2002), and Grinstein and Michaely (2005)) by linking it to the limits of arbitrage and corporate policies that can have a value impact.

Third, our paper relates to the literature on institutional investors (Gompers and Metrick (2001)) and their governance role (Shleifer and Vishny (1986), Bolton and Von Thadden (1998), Kahn and Winton (1998), and Maug (1998)). While in general institutional investors are treated as a single, homogeneous group, more recently their heterogeneity has been analyzed. Hotchkiss and Strickland (2003) look at a classification of investors in terms of category, investment style, momentum strategies, and portfolio turnover, while Bushee (1998), (2001) groups them in terms of horizon. Sulaeman (2007) looks at how firms cater to investor preferences for leverage and investment. Our results contribute by explicitly addressing the problem of the endogeneity of catering, relying on exogenous limits to catering as a source of identification.

The remainder of the paper is articulated as follows: Section II describes the data and the methodology. Section III documents how limits to catering drive catering and analyzes alternative drivers of catering. Section IV analyzes the impact of catering on firm value and the market reaction to equity issue and dividend announcements by catering firms. A brief conclusion follows.

II. Data and Methodology

The sample used in the analysis consists of all the nonfinancial, nonpublic utility firms appearing in the merged Center for Research in Security Prices (CRSP)/Compustat database over the period 1980–2004, with market value of equity of at least \$10 million. These data are supplemented with mutual fund equity holdings from the Thomson Reuters (formerly CDA/Spectrum) database. This section describes the construction of the main variables of interest.

A. Catering Index

Throughout the paper, we employ an index of how closely the firm complies with its investors' payout preferences: the *Catering Index* (CI). We choose to focus on a particular class of investors (mutual funds) for three reasons. First, mutual funds are among the main players in the market, controlling in the aggregate about one-third of the U.S. stock market capitalization, and the literature has linked their portfolio choices to payout policy (Falkenstein (1996), Grinstein and Michaely (2005)). Second, mutual funds arguably provide a good proxy for the payout preferences of the overall market. In particular, mutual funds pass capital gains and dividends on to the terminal investor, and therefore effectively provide a proxy for the overall market preference for particular payout policies. Third, mutual funds operate in a style-segmented market (e.g., Froot and Teo (2004), Cooper et al. (2005)).

While it would be possible to construct a catering index analogous to CI for the entire universe of institutional investors, the style-segmentation aspect of our argument would not necessarily be as relevant. As a robustness check, in unreported tests we reestimate our main specifications with an alternative catering index based on the holdings of all the institutional investors from the Thomson Reuters 13f database, obtaining qualitatively similar results.

We construct the *Catering Index* as follows: In order to focus on mutual funds that potentially care about the payout policy, we exclude index funds from the sample.[3] Then, as the first step, following the approach of Graham and Kumar (2006) for retail investors, we identify a target payout for each mutual fund. By a "revealed preference" argument, this is simply a weighted average of the payout policy that the fund receives from each stock in its portfolio. Let d be a generic payout ratio. The target payout of fund j in period t is

$$d_{jt}^{D} = \sum w_{ijt-1} d_{it-1}, \tag{1}$$

where w_{ij} is the fraction of fund j's portfolio represented by the stocks of firm i. While in principle the mutual fund could hold a stock for a number of reasons other than payout preferences, we know that payout policy is one of the main drivers of mutual fund portfolio choice (e.g., Falkenstein (1996), Grinstein and Michaely (2005)). This supports the notion, on which we base our argument, that each mutual fund has a target payout.

[3] To exclude index funds, we retrieve information on mutual fund investment codes from the CRSP Mutual Funds database and drop the funds identified by the index fund flag, as well as passively managed funds with Lipper Objective codes "SP" and "SPSP" (Standard & Poor's (S&P) 500 Index Objective Funds). In addition, we screen the names of the remaining funds for keywords denoting index funds, such as "index," "indx," or "idx," etc. It should be noted that the coverage of the CRSP Mutual Funds classification is generally sparse in the earlier part of the sample (for this reason it is important to screen fund names as well).

As a second step, we define the "target" payout faced by the firm as a weighted average of the target payouts of its mutual fund investors:

$$D = \sum h_j d_j^D, \tag{2}$$

where h_j is the fraction of shares of the firm held by mutual fund j.

As a third and final step, we define the *Catering Index* (CI) based on the (negative) absolute difference between the firm's actual and "target" payout policy:

$$\text{CI} = -|d - D|. \tag{3}$$

CI increases with catering: The closer the actual payout of the firm to the desired payout D, the higher CI. Note that we based CI on the absolute distance between actual and desired payout policy, as the firm can, in principle, fail to cater by paying out either more or less than its shareholders' target.

We compute CI using three alternative payout ratios (using the above notation, d): DPS/PRICE, DIVIDENDS/EARNINGS, and (DIVIDENDS + REPURCHASES)/EARNINGS. DPS/PRICE is the ratio of dividends per share (Compustat data item 26) to lagged closing price at calendar year-end (Compustat data item 24). DIVIDENDS/EARNINGS is the ratio of dividends (Compustat data item 21) to earnings before interest (equal to the income before extraordinary items (Compustat data item 18) + interest expense (Compustat data item 15) + deferred taxes (Compustat data item 50), if available). (DIVIDENDS + REPURCHASES)/EARNINGS is the ratio of dividends (Compustat data item 21) + repurchases (Compustat data item 115) to earnings before interest. To restrict the attention to positive payout ratios, DIVIDENDS/EARNINGS and (DIVIDENDS + REPURCHASES)/EARNINGS are set equal to 0 when the firm has negative earnings.[4] In order to limit the potential impact of outliers, the *Catering Index* is Winsorized at the 5th percentile.

Both elements of the *Catering Index* (actual and "target" payout) are characterized by substantial variation across different firms. In particular, although the "target" payout D is constructed as a weighted average, its coefficient of variation (ratio of standard deviation to the mean) is 2.5 when D is based on the DPS/PRICE ratio, 2.9 when D is based on the DIVIDENDS/EARNINGS ratio, and 3.4 when D is based on the (DIVIDENDS + REPURCHASES)/EARNINGS ratio.

Table 1 reports summary statistics for the *Catering Index* in the overall sample. Table 2 (Panel A) breaks down the sample into nine investment styles by crossing the dimensions of size (Large, Medium, Small) and book-to-market (Growth, Blend, and Value), and it reports the mean and standard deviation of CI across the style grid. Resorting to a 3×3 investment-style grid is motivated in the first place by the practice of the mutual fund industry, where the Morningstar "style box" used to categorize mutual funds is defined in the same way. In addition, this choice is motivated by empirical considerations: While it would be possible to resort to a larger number of investment styles, in a finer grid some styles could potentially include only a small number of stocks.

[4]Qualitatively similar results obtain if these two ratios are not replaced by 0s in case of negative earnings.

Table 1 and Panel A of Table 2 suggest that there is nonnegligible dispersion in the degree of catering, both across and within the different investment styles. For instance, compared to an average CI based on the DPS/PRICE payout ratio equal to −0.0109, the standard deviation is 0.0157 in the overall sample, ranging from 0.0057 to 0.0194 across the nine investment styles. Figure 1 also illustrates this point, showing that the *Catering Index* also varies over time across the different investment styles.

TABLE 1

Summary Statistics

Table 1 reports the summary statistics for the main variables used in the analysis. For each variable, the mean, median (50th percentile), standard deviation, minimum, maximum, and number of observations are reported. The sample consists of all nonfinancial, nonpublic utility firms in the CRSP/Compustat merged database over the period 1980–2004, with market value of at least $10 million, and for which the variables used in the remainder of the analysis are available.

	Mean	Median	Standard Deviation	Min.	Max.	No. of Obs.
Variable	1	2	3	4	5	6
Catering Index (CI)						
DPS/PRICE	–0.0109	–0.0017	0.0157	–0.0530	0.0000	34,895
DIVIDENDS/EARNINGS	–0.0967	–0.0206	0.1379	–0.4631	0.0000	34,895
(DIVIDENDS + REPURCHASES)/EARNINGS	–0.1937	–0.0582	0.2727	–0.9707	0.0000	34,895
TARGET_PAYOUT_DISPERSION						
DPS/PRICE	0.0019	0.0014	0.0014	0.0003	0.0060	34,895
DIVIDENDS/EARNINGS	0.0296	0.0185	0.0312	0.0032	0.1283	34,895
(DIVIDENDS + REPURCHASES)/EARNINGS	0.0577	0.0339	0.0615	0.0056	0.2541	34,895
SIZE	5.4550	5.2136	1.7331	0.0050	13.0810	34,895
Tobin's *Q*	1.5939	1.2328	1.1150	0.5191	11.8520	34,895
DIVIDEND_PAYOUT	0.0100	0.0000	0.0156	0.0000	0.1132	34,895
LEVERAGE	0.3278	0.3245	0.2373	0.0000	0.9223	34,895
CASH_FLOW	0.0689	0.0869	0.1325	–0.7912	0.4233	34,895
CASH_BALANCES	0.1498	0.0701	0.1995	0.0002	1.5482	34,895
FH	0.1355	0.1030	0.1129	0.0043	0.4079	34,895

TABLE 2

CI and Target Payout Dispersion Proxies across Investment Styles

Table 2 reports descriptive statistics for the *Catering Indexes* (CI) and TARGET_PAYOUT_DISPERSION proxies across different investment styles. Investment styles are defined by partitioning the entire market into a 3 × 3 investment-style grid, along the dimensions of size (Large, Medium, and Small) and book-to-market (Growth, Blend, and Value). For each investment style and each catering index based on the payout ratios DPS/PRICE (columns 1–3), DIVIDENDS/EARNINGS (columns 4–6), and (DIVIDENDS + REPURCHASES)/EARNINGS (columns 7–9), Panel A reports the mean (in regular font) and standard deviation (in italic font) of the *Catering Index*, and Panel B the mean and standard deviation of the associated TARGET_PAYOUT_DISPERSION proxy (i.e., the dispersion in the revealed payout preferences of mutual fund investors in the same investment style as firm *i*). The sample consists of all nonfinancial, nonpublic utility firms in the CRSP/Compustat merged database over the period 1980–2004, with market value of at least $10 million, and for which the variables used in the remainder of the analysis are available.

Panel A. CI Based on:

	DPS/PRICE			DIVIDENDS/ EARNINGS			(DIV + REP)/ EARNINGS		
	Growth	Blend	Value	Growth	Blend	Value	Growth	Blend	Value
	1	2	3	4	5	6	7	8	9
Large	–0.0106	–0.0172	–0.0226	–0.1060	–0.1479	–0.1843	–0.2114	–0.2527	–0.2927
	0.0147	*0.0174*	*0.0194*	*0.1387*	*0.1452*	*0.1605*	*0.2794*	*0.2731*	*0.2845*
Medium	–0.0041	–0.0075	–0.0116	–0.0323	–0.0627	–0.0996	–0.0920	–0.1408	–0.2096
	0.0105	*0.0133*	*0.0167*	*0.0833*	*0.1086*	*0.1450*	*0.2035*	*0.2333*	*0.2884*
Small	–0.0012	–0.0028	–0.0054	–0.0107	–0.0218	–0.0443	–0.0376	–0.0720	–0.1325
	0.0057	*0.0089*	*0.0124*	*0.0448*	*0.0699*	*0.1045*	*0.1303*	*0.1840*	*0.2560*

(continued on next page)

TABLE 2 (continued)

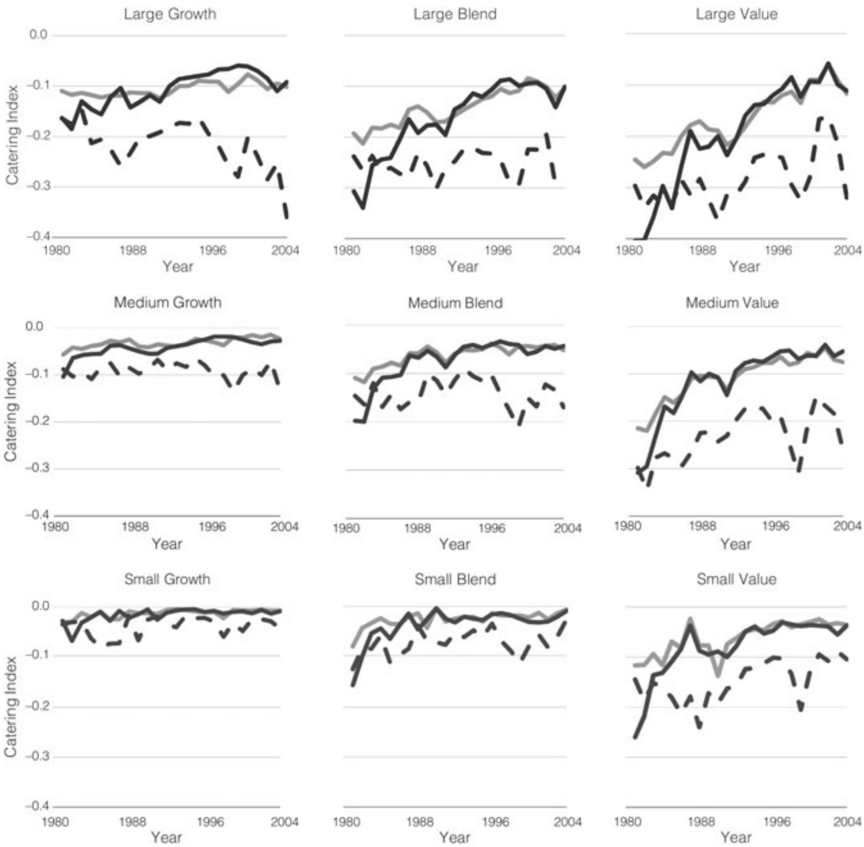
CI and Target Payout Dispersion Proxies across Investment Styles

	Panel B. Investor Fragmentation Based on:								
	DPS/PRICE			DIVIDENDS/ EARNINGS			(DIV + REP)/ EARNINGS		
	Growth 1	Blend 2	Value 3	Growth 4	Blend 5	Value 6	Growth 7	Blend 8	Value 9
Large	0.0030 *0.0015*	0.0022 *0.0010*	0.0032 *0.0019*	0.0423 *0.0312*	0.0320 *0.0281*	0.0365 *0.0332*	0.0732 *0.0573*	0.0590 *0.0616*	0.0647 *0.0673*
Medium	0.0014 *0.0012*	0.0016 *0.0013*	0.0016 *0.0008*	0.0211 *0.0270*	0.0272 *0.0295*	0.0253 *0.0219*	0.0431 *0.0521*	0.0532 *0.0642*	0.0506 *0.0543*
Small	0.0006 *0.0002*	0.0009 *0.0005*	0.0009 *0.0003*	0.0128 *0.0128*	0.0105 *0.0068*	0.0143 *0.0094*	0.0375 *0.0348*	0.0468 *0.0708*	0.0530 *0.0664*

FIGURE 1

Catering Indexes across Sample Years and Investment Styles

Figure 1 plots the average of the three *Catering Indexes* used in the analysis over the sample period 1980–2004 and across the 3 × 3 investment-style grid, defined along the dimensions of size (Large, Medium, and Small) and book-to-market (Growth, Blend, and Value). In each subplot, the solid black line represents the *Catering Index* based on DPS/PRICE (multiplied by 10 for convenient display), the solid gray line the catering index based on DIVIDENDS/EARNINGS, and the dashed black line the catering index based on (DIVIDENDS + REPURCHASES)/EARNINGS. The sample consists of all nonfinancial, nonpublic utility firms in the CRSP/Compustat merged database over the period 1980–2004, with market value of at least $10 million, and for which the variables used in the remainder of the analysis are available.



B. Limits to Catering and Control Variables

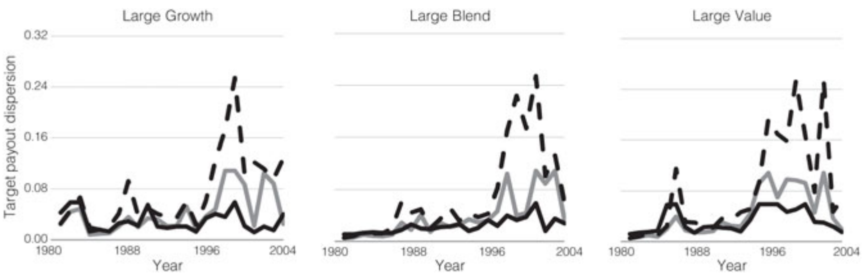
Based on the intuition from the example discussed in the Introduction, our main proxy for the limits to catering is equal to the standard deviation of the "target" payout in a given investment style (in the notation used in the previous section, *D*), based on DPS/PRICE, DIVIDENDS/EARNINGS, (DIVIDENDS + REPURCHASES)/EARNINGS: TARGET_PAYOUT_DISPERSION. This proxy incorporates the two key elements of limits to catering: the dispersion of investor payout preferences ("revealed" by their portfolio choices) and market segmentation into investment styles.[5]

As for the *Catering Index*, Table 1 reports summary statistics for the TARGET_PAYOUT_DISPERSION in the overall sample, and Table 2 (Panel B) across the investment styles of the size/book-to-market grid. These statistics suggest that there is considerable variation in the TARGET_PAYOUT_DISPERSION, both within and across the different investment styles. If we focus on the TARGET_PAYOUT_DISPERSION proxy based on DPS/PRICE, for instance, we see that the standard deviation in the overall sample is 0.0014, or 74% (100%) compared to the sample mean (median), while the standard deviation in the individual investment styles ranges from 0.0002 to 0.0032. Figure 2 complements these statistics by illustrating the time-series variation of the three TARGET_PAYOUT_DISPERSION proxies across the nine investment styles. In addition, a visual comparison between Figures 1 and 2 corroborates the argument made in the

FIGURE 2

Target Payout Dispersion across Sample Years and Investment Styles

Figure 2 plots the TARGET_PAYOUT_DISPERSION proxies used in the analysis over the sample period 1980–2004 and across the 3 × 3 investment-style grid, defined along the dimensions of size (Large, Medium, and Small) and book-to-market (Growth, Blend, and Value). In each subplot, the solid black line represents TARGET_PAYOUT_DISPERSION based on DPS/PRICE (multiplied by 10 for convenient display), the solid gray line TARGET_PAYOUT_DISPERSION based on DIVIDENDS/EARNINGS, and the dashed black TARGET_PAYOUT_DISPERSION based on (DIVIDENDS + REPURCHASES)/EARNINGS. The sample consists of all nonfinancial, nonpublic utility firms in the CRSP/Compustat merged database over the period 1980–2004, with market value of at least $10 million, and for which the variables used in the remainder of the analysis are available.



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[5]We consider segmentation by investment style more appropriate than other dimensions (e.g., industry or geography), as it is more widely employed in the industry, as witnessed, for example, by the Morningstar "style box" or by the value and growth indices provided by Russell or Morgan Stanley Capital International (MSCI)/BARRA. In unreported results, we re-implement the analysis, replacing size and book-to-market by industry. The results are consistent with those reported and are omitted for brevity.

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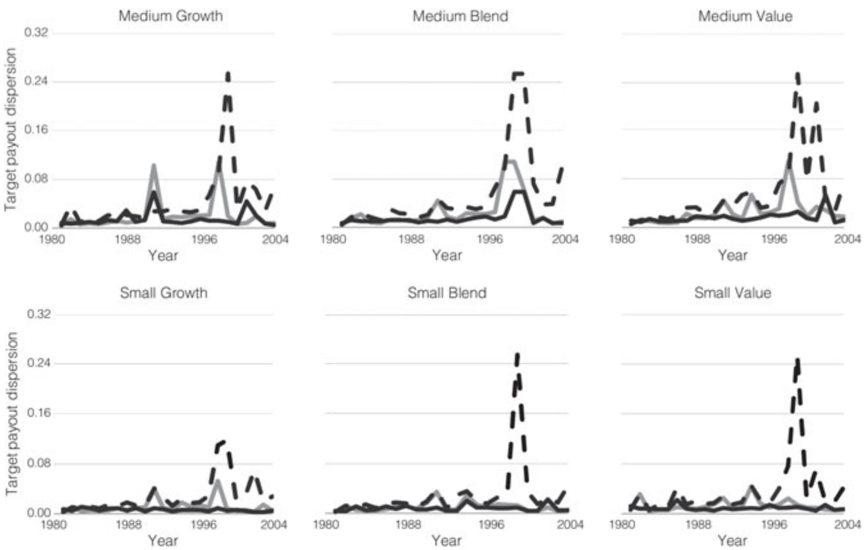
FIGURE 2 (continued)

Target Payout Dispersion across Sample Years and Investment Styles



Introduction, that a greater dispersion in the payout preferences of the investors limits the firm's ability to cater. Indeed, the investment styles and time periods that display the larger TARGET_PAYOUT_DISPERSION also appear to have the lowest levels of catering across all three versions of the *Catering Index*. We will discuss this point in greater detail and formally test the "limits to catering" hypothesis in the next section.

In addition to the *Catering Index* and the TARGET_PAYOUT_DISPERSION proxies, in the tests presented later we also control for institutional investor demand at the firm and the investment-style levels. Following Falkenstein (1996), FH is the log-holdings of mutual funds in a given firm, or $\text{FH} = \ln(1 + \%H)$, where $\%H$ is the fraction of the firm's shares held by mutual funds, retrieved from the Thomson Reuters mutual fund equity holdings database. Furthermore, throughout the paper we include a comprehensive set of control variables in all the regression specifications, including firm SIZE (natural logarithm of total assets), Tobin's Q, the level of the DIVIDEND_PAYOUT ratio, LEVERAGE, CASH_FLOW, and CASH_BALANCES ratios, consistent with the indications of the literature. All the variables used in the analysis are defined in detail in the Appendix.

III. Determinants of Catering

We start by focusing on the nature of catering, and we investigate its determinants. In the first part of this section, we study the role of limits to catering. In the second part, we briefly discuss potential alternative determinants of catering. Our results suggest that, while catering appears to be associated with a future increase in mutual fund holdings, current mutual fund holdings do not appear to result in increased catering in the future. This result is consistent with the argument that control of the payout policy by mutual funds is not the main determinant of catering, after limits to catering have been taken into account. We also consider additional potential determinants of catering, such as financial constraints and the quality of corporate governance, but we find that these do not appear to have a material impact on the degree of catering.

A. Limits to Catering

In the presence of limits to catering (i.e., a combination of competing investor payout preferences and market segmentation into different investment styles), the firm's ability to cater to investors via the payout policy will be limited. Thus, we should expect the *Catering Index* (CI) to be negatively related to the TARGET_PAYOUT_DISPERSION proxies discussed in the previous section. In addition, to the extent that our proxies for limits to catering are based on style aggregates, they are unlikely to be driven by the payout policy of an individual firm or the portfolio decisions of an individual fund. This suggests that we can interpret the results of these tests in a causal sense (i.e., capturing the impact of exogenous limits to catering on the firm's ability to cater). To test the limits to catering hypothesis, we estimate the following regression:

$$\Delta \mathrm{CI}_{it} = \alpha + \beta \Delta \Sigma_{it} + \gamma' \Delta x_{it} + \varepsilon_{it}, \quad (4)$$

where the symbol Δ denotes yearly changes, that is, $\Delta \mathrm{CI}_{it} = \mathrm{CI}_{it} - \mathrm{CI}_{it-1}$; Σ denotes the limits to catering proxies (TARGET_PAYOUT_DISPERSION, based on DPS/PRICE, DIVIDENDS/EARNINGS, and (DIVIDENDS + REPURCHASES)/EARNINGS); and x is a standard set of control variables, including firm SIZE, Tobin's Q, DIVIDEND_PAYOUT ratio, LEVERAGE, CASH_FLOW, CASH_BALANCES, and industry indicators. The sample includes all the nonfinancial, nonpublic utility firms appearing in the merged CRSP/Compustat database over the period 1980–2004, with market value of equity of at least \$10 million, for which there is complete available information on all the variables of interest. Following Petersen (2009), the standard errors are clustered around individual firms.[6]

The results are reported in Table 3. We find a strong, negative relationship between catering and limits to catering, as proxied by the TARGET_PAYOUT_DISPERSION. This holds across the different specifications and for the different payout ratios. A 1-standard-deviation increase in TARGET_PAYOUT_DISPERSION reduces catering by about 1% when CI is based on DPS/PRICE (2% and 7% when based on DIVIDENDS/EARNINGS and (DIVIDENDS + REPURCHASES)/EARNINGS).[7] These results support our working hypothesis

[6]Model (4) is estimated on yearly changes in order to control for unobserved firm fixed effects. This is also consistent with the Anderson and Hsiao (1981) approach adopted in the next section to estimate models (5) and (6). Analogous results obtain if the model is estimated on the levels instead of changes. In unreported tests, we also cluster the standard errors around investment styles, obtaining qualitatively similar results. Finally, we also estimate model (4) using the Fama-MacBeth (1973) methodology. The results are consistent with those discussed previously and are omitted in the interest of brevity.

[7]These economic effects are computed as follows: The standard deviation of TARGET_PAYOUT_DISPERSION, based on DPS/PRICE, is 0.0014 (Table 1). Multiplied by the coefficient

TABLE 3

Catering and Limits to Catering

Table 3 reports the estimates of a model:

$$\Delta \text{CI}_{it} \quad = \quad \alpha + \beta \Delta \Sigma_{it} + \gamma' \Delta x_{it} + \varepsilon_{it}.$$

The dependent variable is the yearly change in the catering index (CI), based on the payout ratios DPS/PRICE (columns 1 and 4), DIVIDENDS/EARNINGS (columns 2 and 5), and (DIVIDENDS + REPURCHASES)/EARNINGS (columns 3 and 6). Σ denotes the limits to catering proxies (TARGET_PAYOUT_DISPERSION) (i.e., the dispersion in the revealed payout preferences of mutual fund investors in the same investment style as firm i). Investment styles are defined based on the 3 × 3 grid along the dimensions of size (Large, Medium, and Small) and book-to-market (Value, Blend, and Growth), as described in the text and in the Appendix. Here, x is a vector of control variables, including industry indicators. Following Petersen (2009), in all specifications the standard errors are clustered around individual firms. The sample consists of all nonfinancial, nonpublic utility firms in the CRSP/Compustat merged database over the period 1980–2004, with market value of at least $10 million, with available information on all the variables used in the analysis. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	Catering Index Based on:					
	DPS/ PRICE	DIV/ EARNINGS	(DIV + REP)/ EARNINGS	DPS/ PRICE	DIV/ EARNINGS	(DIV + REP)/ EARNINGS
Variable	1	2	3	4	5	6
TARGET_PAYOUT_DISPERSION						
DPS/PRICE	–0.0899*** *–2.85*			–0.1086*** *–3.49*		
DIV/EARNINGS		–0.0838*** *–4.12*			–0.0777*** *–3.85*	
(DIV + REP)/EARNINGS			–0.1916*** *–5.80*			–0.2286*** *–6.48*
SIZE				0.0003* *1.81*	–0.0003 *–0.19*	0.0451*** *8.26*
Tobin's *Q*				0.0000 *1.22*	0.0019*** *4.82*	0.0107*** *6.29*
DIVIDEND_PAYOUT				–0.3328*** *–18.50*	–3.7559*** *–22.05*	–5.6469*** *–16.26*
LEVERAGE				–0.0012*** *–3.12*	0.0085** *1.97*	–0.0975*** *–6.51*
CASH_FLOW				0.0019*** *5.51*	–0.0041 *–0.75*	–0.1122*** *–7.94*
CASH_BALANCES				0.0009*** *4.03*	0.0115*** *4.34*	0.0619*** *6.14*
DIVIDEND_PREMIUM				0.0000 *1.57*	–0.0001** *–2.50*	–0.0001 *–0.27*
No. of obs.	33,745	33,745	33,745	33,745	33,745	33,745
R^2	0.000	0.001	0.002	0.093	0.077	0.026

that the firm caters less when it is more difficult to cater to investor payout preferences (i.e., in the presence of limits to catering).

In unreported results, omitted for brevity, we also relate the *Catering Index* to additional investment-style characteristics that can have an impact on the firm's ability to cater, such as the average analyst forecast dispersion, illiquidity, and idiosyncratic volatility. These variables have been used in the literature as proxies for limits of arbitrage, or to gauge the extent to which the demand for the firm's stocks slopes down (see also, e.g., Wurgler and Zhuravskaya (2002), Baker, Coval, and Stein (2007)). To the extent that the demand for the firm's

−0.1086 (column 4 of Table 3), it indicates an effect of −0.00015 in absolute terms. Relative to the sample mean of CI based on DPS/PRICE of −0.0110 (Table 1), this corresponds to a 1.4% reduction in the *Catering Index*. The economic effects for the other versions of the *Catering Index* are computed analogously.

stocks slopes down, the firm faces a higher cost, in terms of stock price drop, if it disappoints its shareholders' payout preferences. At the same time, limits of arbitrage also reduce the ability of the disappointed shareholders to sell the stock without experiencing a price discount. Therefore, these variables help to control for both the cost of the firm to disappoint its shareholders, as well as its ability to do so at no cost. Confirming this intuition, the results indicate that these variables have a similar impact on the *Catering Index* as the target payout dispersion proxies.

B. Alternative Potential Drivers of Catering

We now briefly discuss potential alternative determinants of catering. First, the firm may be more compliant with shareholder payout preferences if the shareholders, and in particular the mutual funds, can exert more stringent control on firm policies. In addition, financial constraints and the quality of corporate governance could also have an impact on the firm's ability, or willingness, to cater to its investors' payout preferences.

We start by testing whether firms are more compliant with shareholder preferences if the shareholders can exert more stringent control. We test this hypothesis by studying whether the fraction of the firm owned by mutual funds (FH) drives the *Catering Index*. If catering is driven by mutual fund ownership, we expect mutual fund holdings to Granger-cause the *Catering Index* (i.e., mutual fund ownership in year $t-1$ will determine catering in year t). On the other hand, it is also possible that the firm's ability to cater via the payout policy (i.e., the *Catering Index*) can Granger-cause FH. While we describe these results in terms of Granger-causality, we stress a cautious interpretation of our findings. Indeed, this test is mainly designed to ensure that the *Catering Index* is not purely driven by mutual fund control, so as to verify the validity of the argument of limits to catering. To test this hypothesis, we estimate the following system of regression equations:

$$\text{(5)} \qquad \text{CI}_{it} = \alpha_1 + \beta_1 \text{CI}_{it-1} + \gamma_1 \text{FH}_{it-1} + \delta_1' x_{it} + \varepsilon_{it},$$

$$\text{(6)} \qquad \text{FH}_{it} = \alpha_2 + \beta_2 \text{CI}_{it-1} + \gamma_2 \text{FH}_{it-1} + \delta_2' x_{it} + \eta_{it},$$

where CI denotes the *Catering Index*; FH is the log-mutual fund holdings of the firm's shares, defined above; and x is a vector of control variables used throughout the analysis, including firm, industry, and year fixed effects.[8] We estimate these specifications as a dynamic panel, using the Anderson and Hsiao (1981) methodology; that is, regressions (5) and (6) are estimated on yearly changes, thus controlling for firm fixed effects, and the lagged dependent variable in each equation is instrumented by its lagged changes. Additional instruments for the *Catering*

[8]Regressions (5) and (6) are based on yearly observations of mutual fund ownership and the *Catering Index*. In order to address concerns about the frequency of the changes in catering and mutual fund holdings implied by our estimates, we re-run the models based on 2-year lags (i.e., replacing the $t-1$ indices by $t-2$). The results are consistent with those reported here and are omitted in the interest of brevity.

Index are provided by the limits to catering proxies discussed in the previous section.

The results are reported in Table 4. In columns 1–3, the dependent variable is FH, while in columns 4–6, it is the *Catering Index*. In columns 1 and 4, the *Catering Index* is based on DPS/PRICE; in columns 2 and 5, it is based on DIVIDENDS/EARNINGS; and in columns 3 and 6, on (DIVIDENDS + REPURCHASES)/EARNINGS.

TABLE 4

Catering and Mutual Fund Holdings

Table 4 reports the estimates of the system of equations:

$$\mathrm{CI}_{it} = \alpha_1 + \beta_1 \mathrm{CI}_{it-1} + \gamma_1 \mathrm{FH}_{it-1} + \delta_1' x_{it} + \varepsilon_{1,it},$$
$$\mathrm{FH}_{it} = \alpha_2 + \beta_2 \mathrm{CI}_{it-1} + \gamma_2 \mathrm{FH}_{it-1} + \delta_2' x_{it} + \varepsilon_{2,it}.$$

The dependent variable of the first equation is the catering index (CI), based on the payout ratios DPS/PRICE, DIVIDENDS/EARNINGS, and (DIVIDENDS + REPURCHASES)/EARNINGS. The dependent variable of the second equation is the (log) mutual fund holdings FH. Here, x is a vector of control variables, omitted for brevity: SIZE (natural logarithm of total assets), Tobin's Q, DIVIDEND_PAYOUT, LEVERAGE, CASH_FLOW, CASH_BALANCES, as well as industry and year indicators. Each equation is estimated as a dynamic panel, using the Anderson and Hsiao (1981) approach; that is, they are estimated on changes, and the lagged dependent variable is instrumented by its lagged changes. In each equation, the *Catering Index* is also instrumented by the limits to catering proxies described in the text. Following Petersen (2009), in each equation the standard errors are clustered around individual firms. In each specification, the rows labeled Hansen J-statistic and p-value report the overidentification test statistic and the associated p-value. The sample consists of all non-financial, nonpublic utility firms in the CRSP/Compustat merged database over the period 1980–2004, with market value of at least $10 million, with available information on all the variables used in the analysis. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	Dependent Variable					
				CI		
	FH			(DPS/ PRICE)	(DIV/ EARNINGS)	((DIV + REP)/ EARNINGS)
Variable	1	2	3	4	5	6
FH	0.3453*** *6.02*	0.3283*** *4.72*	0.3269*** *4.98*	0.0007 *0.65*	0.0075 *0.52*	0.0218 *0.55*
Catering Index						
DPS/PRICE	1.8717** *2.17*			0.2682*** *4.91*		
DIVIDENDS/EARNINGS		0.6980** *2.10*			0.1224*** *3.46*	
(DIVIDENDS + REPURCHASES)/ EARNINGS			0.2290*** *2.60*			0.0483** *2.06*
[Control variables suppressed]						
No. of obs.	21,674	21,674	21,674	21,879	21,879	21,879
Hansen J-statistic	4.47	4.85	0.14	0.19	0.39	1.45
p-value	0.11	0.09	0.93	0.66	0.53	0.23

The estimates of Table 4 suggest that the impact of fund holdings on the *Catering Index* is modest. The coefficient on FH in the specifications reported in columns 4–6 is small in absolute terms and never statistically significant. In other words, FH fails to Granger-cause the *Catering Index*. In contrast, a higher *Catering Index* is associated with increased mutual fund investment in the firm (i.e., that the *Catering Index* Granger-causes FH). The estimates of Table 4 imply that a 10% increase in the *Catering Index* based on DPS/PRICE is associated with an increase in (log-)mutual fund holdings by 0.2 percentage points, or 2% relative to the sample mean of FH, 0.1355 (0.8 and 0.5 percentage points when

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based on DIVIDENDS/EARNINGS and (DIVIDENDS + REPURCHASES)/EARNINGS).[9] This suggests that the impact of catering on mutual funds' demand for the firm's stocks is economically meaningful, while not implausibly large.

In additional tests, omitted for brevity, we also examine two further potential drivers of catering: financial constraints and the quality of corporate governance. A financially constrained firm might not be able to make large payouts to its investors, and this could also explain the firm's inability to cater. Contrary to this intuition, we find a weak, negative relationship between the *Catering Index* and alternative payout ratios. This suggests that the *Catering Index* is not materially related to financial constraints. Second, catering could be a product of better governance. We therefore look at the relationship between the *Catering Index* and the Gompers, Ishii, and Metrick (2003) governance index. The results suggest that, after controlling for limits to catering as proxied by the TARGET_PAYOUT_DISPERSION, the Gompers et al. index does not have a significant impact on the *Catering Index*.

IV. The Impact of Catering on Firm Value

This section examines the impact of catering on firm value. If catering is a sign of alignment of the firm's policies to shareholder preferences, the market should better perceive firms that cater. We discuss three pieces of evidence consistent with this hypothesis. In Section IV.A we examine the relationship between change in firm value and increases in the *Catering Index*. We then examine the market reaction to corporate events in relation to catering by focusing on equity issues (Section IV.B) and dividend changes (Section IV.C).

A. The Impact of Catering on Stock Prices

We start by looking at the effects of a change in the *Catering Index* on stock prices. We employ a methodology based on calendar time portfolios. Each year, we rank firms based on the percentage change in the *Catering Index* with respect to the previous year. We then form portfolios by sorting firms into deciles, based on their ranking by change in the *Catering Index*. We focus on three portfolios: one that is long in the stocks in the top decile and short in the stocks in the bottom decile (Top 10% – Bottom 10%), one long in the stocks in the top two deciles and short in the stocks in the bottom two deciles (Top 20% – Bottom 20%), and one long in the stocks in the top three deciles and short in the stocks in the bottom three deciles (Top 30% – Bottom 30%). The portfolios are rebalanced each year in December. We then measure the portfolio's performance over the 12 months (i.e., from Jan., year *t*, to Dec., year *t*) over which we measure the percentage

[9]These economic effects are computed as follows: A 10% increase in the *Catering Index* based on DPS/PRICE, relative to the sample mean of −0.0109, corresponds to 0.0011. Multiplied by the coefficient estimate of 1.8717 (column 1 of Table 4), this results in an implied increase in (log-)mutual fund holdings by 0.002, or 0.2 percentage points. Relative to the sample mean of FH, 0.1355, this implies a 2% increase. The economic effects associated with the other versions of the *Catering Index* are estimated analogously.

change in the *Catering Index*. We measure performance using a Carhart (1997) 4-factor model:

$$(7) \quad R_{pt} - R_{ft} \quad = \quad \alpha + \beta_1(R_{mt} - R_{ft}) + \beta_2 \text{SMB}_t + \beta_3 \text{HML}_t + \beta_4 \text{UMD}_t + \varepsilon_t,$$

where R_{pt} is the monthly return of long-short portfolio p, R_{ft} denotes the riskless rate of return, R_{mt} the market return, and SMB, HML, and UMD are the returns on the size, book-to-market, and momentum factor-mimicking portfolios, respectively. We also look at net-of-industry returns, where the stock's industry is determined based on the Fama and French (1997) industry classification.

The significance and magnitude of the α coefficient determines whether the portfolio exhibits abnormal performance in the period over which we calculate the change in the *Catering Index*. We focus on the price change contemporaneous to the change in the *Catering Index*, as we want to study the effect of a change in the *Catering Index* on the stock price. We therefore do not make any claim as to the implementability of a trading strategy based on such information.

The results, reported in Table 5, suggest that firms that increase the *Catering Index* experience significantly higher returns. The estimated coefficient α can be as large as 60 bp per month, or about 7% annualized, net of risk. This is consistent with the hypothesis that the ability to cater has a tangible impact on the value of the firm's stocks.

We refine this test by considering a potential interaction with the Baker and Wurgler (2004) DIVIDEND_PREMIUM.[10] It is possible to interpret the DIVIDEND_PREMIUM as a proxy for the extent to which the market cares about payout policy. As a result, we could expect that the ability to cater should have a stronger impact on value in the presence of a higher DIVIDEND_PREMIUM. We test this hypothesis by estimating equation (7) separately on two subsamples, with high (above the median over the sample period) and low (below the median) DIVIDEND_PREMIUM. The estimates, reported in Table 5, are indeed consistent with a larger value impact of catering in the presence of a higher DIVIDEND_PREMIUM. Indeed, the coefficient α is always larger in the "high DIVIDEND_PREMIUM" subsample, and the difference between the high- and low-DIVIDEND_PREMIUM α is always significant.

B. Catering and the Market Reaction to Equity Issues

If the market appreciates catering, it should better receive new requests of funding from firms that are better able to cater via the payout policy. We should therefore observe a more favorable market reaction to seasoned equity offering (SEO) announcements.

We retrieve SEO announcement dates from the Security Data Corporation's (SDC) New Issues database and compute abnormal returns around the announcement date as the residuals from a market model. The average cumulative abnormal return (CAR) over a 3-day window $(-1, +1)$ around the event date is -0.73% (p-value < 0.01), and -0.65% over a 7-day window $(-3, +3)$ (p-value < 0.01).

[10]We thank the referee for this valuable suggestion.

TABLE 5

Impact of Catering on the Stock Price

Table 5 reports the estimates of the performance of portfolios constructed based on the yearly change in the *Catering Index* (CI). Each portfolio is constructed as follows: Each sample year, stocks are sorted and grouped into deciles according to the percentage change in the CI with respect to the previous year. Three portfolios are then formed, long in the top 10% (20%, 30%) and short in the bottom 10% (20%, 30%). The performance of each portfolio over the year during which the index CI has increased is then evaluated, as the intercept (alpha) from a Carhart (1997) 4-factor model for the stock return. This approach is repeated both for raw returns and net-of-industry returns, and for the three catering indexes, based on DPS/PRICE, DIVIDENDS/EARNINGS, and (DIVIDENDS + REPURCHASES)/EARNINGS. The test is further repeated on two subsamples, corresponding to years in which the Baker and Wurgler (2004) DIVIDEND_PREMIUM is "high" (above the median) or "low" (below the median). Panel A reports the estimates based on raw returns, and Panel B on net-of-industry returns. In each panel, columns 1, 5, and 9 report the portfolio performance in the overall sample, columns 2, 6, and 10 over periods with high DIVIDEND_PREMIUM, columns 3, 7, and 11 over periods of low DIVIDEND_PREMIUM, and columns 4, 8, and 12 report the *F*-test statistic for the difference between the estimates of the performance during high and low DIVIDEND_PREMIUM periods. The sample consists of all nonfinancial, nonpublic utility firms in the CRSP/Compustat merged database over the period 1980–2004, with market value of at least $10 million, with available information on all the variables used in the analysis. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	CI Based on:											
	DPS/PRICE				DIVIDENDS/EARNINGS				(DIVIDENDS + REPURCHASES)/EARNINGS			
		DIVIDEND_PREMIUM				DIVIDEND_PREMIUM				DIVIDEND_PREMIUM		
	Overall	High	Low	*F*-Test	Overall	High	Low	*F*-Test	Overall	High	Low	*F*-Test
Portfolio	1	2	3	4	5	6	7	8	9	10	11	12
Panel A. Raw Returns												
Top 10% – Bottom 10%	0.0060***	0.0072***	0.0015	6.78***	0.0043***	0.0075***	0.0012	7.69***	0.0058***	0.0078***	0.0011	10.35***
	3.27	*5.20*	*0.87*		*3.35*	*5.32*	*0.69*		*5.01*	*5.62*	*0.74*	
Top 20% – Bottom 20%	0.0036**	0.0046***	–0.0017	8.66***	0.0009	0.0042***	–0.0021	7.83***	0.0022**	0.0046***	–0.0018	11.00***
	2.56	*4.12*	*–0.93*		*0.67*	*3.97*	*–1.07*		*2.24*	*4.43*	*–1.10*	
Top 30% – Bottom 30%	0.0022*	0.0030***	–0.002	7.54***	–0.0003	0.0024***	–0.0026	5.67**	0.0007	0.0029***	–0.0020	9.26***
	1.91	*3.06*	*–1.30*		*–0.23*	*2.57*	*–1.38*		*0.87*	*3.33*	*–1.47*	
Panel B. Net-of-Industry Returns												
Top 10% – Bottom 10%	0.0062***	0.0071***	0.0019	5.77**	0.0044***	0.0072***	0.0016	6.71**	0.0059***	0.0077***	0.0015	9.03***
	3.39	*4.97*	*1.13*		*3.62*	*5.05*	*0.98*		*5.23*	*5.32*	*1.04*	
Top 20% – Bottom 20%	0.0036***	0.0047***	–0.0016	8.55***	0.0010	0.0042***	–0.0019	7.79***	0.0023**	0.0047***	–0.0016	10.80***
	2.57	*3.99*	*–0.87*		*0.81*	*3.81*	*–1.00*		*2.43*	*4.18*	*–1.02*	
Top 30% – Bottom 30%	0.0024**	0.0031***	–0.0019	7.71***	–0.0003	0.0024**	–0.0025	6.06**	0.0008	0.0029***	–0.0019	9.43***
	2.00	*3.10*	*–1.28*		*–0.24*	*2.52*	*–1.44*		*1.03*	*3.27*	*–1.47*	

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We then regress the announcement returns over the $(-1,+1)$ and $(-3,+3)$ windows on the *Catering Index* and a set of control variables.[11] One difficulty with this approach is the potential endogeneity of the decision to issue equity. For example, the announcement returns and catering could be correlated with a third variable that influences the choice of the firm to issue equity. In addition, if the firm expects a better market reaction to the equity issue due to its superior catering ability, it should also be more likely to issue equity in the first place. In other words, there is a potential selection problem. We explicitly address this problem using a Heckman (1979) selection model. In a first stage, we estimate a probit regression for the probability of the firm announcing an SEO. From this model, we obtain an inverse Mills ratio, or hazard rate, which we include in the second-stage regression of the announcement return on the *Catering Index*.

Table 6 reports the estimates of the first-stage probit model. Consistent with the hypothesis that catering is associated with a higher propensity to resort to

TABLE 6

Catering and Equity Issues

Table 6 reports the estimates of a probit model, where the dependent variable is equal to 1 if a given firm in a given year announces a seasoned equity offering (SEO), and 0 otherwise. The explanatory variables are the catering index (CI), based on the payout ratios DPS/PRICE, DIVIDENDS/EARNINGS, and (DIVIDENDS + REPURCHASES)/EARNINGS, the vector of control variables used throughout, as well as the SPREAD between the interest rate on AAA-rated corporate bonds and the risk-free interest rate. Following Petersen (2009), in each equation the standard errors are clustered around individual firms. The sample consists of all nonfinancial, nonpublic utility firms in the CRSP/Compustat merged database over the period 1980–2004, with market value of at least $10 million, with available information on all the variables used in the analysis. SEO announcement information is retrieved from the Security Data Corporation's (SDC) New Issues database. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Variable	1	2	3	4	5	6
Catering Index						
DPS/PRICE	4.3495***			0.3440		
	4.53			*0.25*		
DIVIDENDS/EARNINGS		0.5728***			0.4186***	
		8.99			*6.03*	
(DIVIDENDS + REPURCHASES)/ EARNINGS			0.8854***			0.5886***
			7.64			*3.14*
SIZE				0.0252***	0.0318***	0.0307***
				2.62	*3.34*	*3.24*
Tobin's *Q*				0.1611***	0.1585***	0.1584***
				17.82	*17.74*	*17.71*
DIVIDEND_PAYOUT				–8.7972***	–6.0931***	–5.4742***
				–6.08	*–5.30*	*–3.56*
LEVERAGE				0.5228***	0.4871***	0.4949***
				8.33	*7.73*	*7.90*
CASH_FLOW				0.4806***	0.5003***	0.4640***
				4.46	*4.77*	*4.39*
CASH_BALANCES				0.0669	0.0546	0.0535
				0.99	*0.81*	*0.79*
SPREAD				6.3685***	6.1079***	6.4606***
				9.75	*9.34*	*9.97*
Intercept	–1.6226***	–1.5773***	–1.5929***	–2.7885***	–2.7464***	–2.7924***
	–103.44	*–101.34*	*–103.73*	*–32.01*	*–31.31*	*–32.09*
No. of obs.	34,895	34,895	34,895	34,895	34,895	34,895
Pseudo R^2	0.00	0.01	0.01	0.04	0.04	0.04

[11]The announcement returns are yearly averages for firms with more than one announcement in a given year.

an equity issue, the coefficient on the *Catering Index* is positive and generally significant. A 10% increase in the *Catering Index* is associated with an increase in the probability of an equity issue of about 0.1 percentage points, or about 2% relative to the overall sample frequency of equity issues (0.048). This suggests that the relationship between catering and issuing equity is economically significant, and at the same time the implied effect of catering is not implausibly large.

Table 7 reports the estimates of a regression of the announcement returns (CAR over the $(-1,+1)$ (Panel A) and $(-3,+3)$ (Panel B) windows) on the

TABLE 7

Catering and the Market Reaction to Equity Issues

Table 7 reports the estimates of a model:

$$\text{CAR}_i = \alpha + \beta \text{CI}_i + \gamma' x_i + \varepsilon_i.$$

The dependent variable is the cumulative abnormal return (CAR) around the announcement of a seasoned equity offering (SEO) and is estimated as the cumulative residuals from a market model. In Panel A, this is defined over a 3-day $(-1, +1)$ window around the announcement date. In Panel B, over a 7-day $(-3, +3)$ window around the announcement date. CI denotes the *Catering Index*, based on the payout ratios DPS/PRICE, DIVIDENDS/EARNINGS, and (DIVIDENDS + REPURCHASES)/EARNINGS. Here, x denotes a vector of control variables, whose coefficients are omitted from the table for brevity: SIZE, Tobin's *Q*, DIVIDEND_PAYOUT, LEVERAGE, CASH_FLOW, CASH_BALANCES, as well as the SEO's OFFER_SIZE and the stock return over the 6-month period prior to the SEO announcement (RUNUP). All explanatory variables except OFFER_SIZE and RUNUP are expressed in terms of their value as of the end of the year prior to the SEO announcement. In each panel, the model is estimated with simple OLS in columns 1, 3, and 5, and in columns 2, 4, and 6 with an instrumental variables (IV) estimation, combined with a Heckman (1979) 2-step selection model to account for the potential endogeneity of the decision to issue equity (the first-stage probit estimates are reported in Table V). In the IV estimation, CI is instrumented with the limits to catering described in the text. Following Petersen (2009), in all specifications the standard errors are clustered around individual firms. SEO announcement information is retrieved from the Security Data Corporation's (SDC) New Issues database, and the sample consists of the intersection between the SDC announcement data and the sample of all nonfinancial, nonpublic utility firms in the CRSP/Compustat merged database over the period 1980–2004, with market value of at least $10 million, with complete available information on all the variables, used throughout. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Variable	1	2	3	4	5	6
Panel A. Dependent Variable: CAR(−1, +1)						
Catering Index						
DPS/PRICE	0.0510	0.8087				
	0.36	*0.92*				
DIVIDENDS/EARNINGS			0.0372*	0.1204*		
			1.80	*1.87*		
(DIVIDENDS + REPURCHASES)/EARNINGS					0.0188**	0.0490**
					2.25	*2.19*
INVERSE_MILLS_RATIO		0.0301		−0.0039		−0.0206
		0.88		*−0.23*		*−0.94*
[Control variables suppressed]						
No. of obs.	1,286	1,286	1,286	1,286	1,286	1,286
R^2	0.007	−0.006	0.008	0.000	0.009	0.004
Hansen *J*-statistic		7.36		7.16		3.99
p-value		0.06		0.07		0.26
Panel B. Dependent Variable: CAR(−3, +3)						
Catering Index						
DPS/PRICE	0.2853	0.7016				
	1.41	*0.62*				
DIVIDENDS/EARNINGS			0.0539*	0.0811		
			1.75	*0.97*		
(DIVIDENDS + REPURCHASES)/EARNINGS					0.0306***	0.0528*
					2.62	*1.78*
INVERSE_MILLS_RATIO		−0.0133		−0.0351		−0.0453
		−0.30		*−1.49*		*−1.49*
[Control variables suppressed]						
No. of obs.	1,286	1,286	1,286	1,286	1,286	1,286
R^2	0.015	0.013	0.016	0.018	0.018	0.020
Hansen *J*-statistic		2.77		5.47		2.57
p-value		0.43		0.14		0.46

Catering Index and control variables. In each panel, in columns 1, 3, and 5 the estimates are based on simple ordinary least squares (OLS), while in columns 2, 4, and 6 they are based on instrumental variables (IV) estimation combined with the Heckman (1979) selection model.[12] The findings are consistent with a positive correlation between catering and the market reaction to the SEO announcement. A 10% increase in the *Catering Index* is associated with an increase in the announcement return ranging between 0.5 bp and 9 bp, or between 1% and 9% relative to the average $(-1,+1)$ CAR. This suggests that the economic impact of catering is economically meaningful.

C. Catering and Dividend Announcements

We now turn to the impact of catering on the market reaction to dividend announcements. A change in the firm's dividend policy that is consistent with the payout preferences of its investors should be better received by the market. On the other hand, there should be a worse market reaction to a dividend announcement revealing that the firm does not change its dividend policy in accordance with investor preferences.

This test thus considers two types of dividend announcements: dividend increases and dividend continuations (i.e., no change in dividends per share compared to prior announcements).[13] Dividend announcement dates are retrieved from the CRSP Events database. We restrict the attention to ordinary quarterly, taxable cash dividends paid in U.S. dollars (CRSP distribution code 1232) for the sample of nonfinancial, nonpublic utility firms in the CRSP/Compustat merged database used throughout. We compute the abnormal returns around the announcement date as the residuals from a market model. The average CAR on a 3-day window $(-1,+1)$ around the dividend increase announcement date is 92 bp (p-value < 0.01) and 78 bp (p-value < 0.01) over a 7-day window $(-3,+3)$. The corresponding values around dividend continuation announcement dates are 19 bp and 11 bp, respectively.

Next, we categorize dividend increases on the basis of whether increasing dividends is consistent with the investor "target" payout faced by the firm (i.e., whether the dividend increase will result in an increase in the *Catering Index*). In particular, we create an indicator variable INVESTORS_"PREFER"_INCREASE, equal to 1 if a dividend increase is announced, and the investors' "target" payout faced by the firm is above the prior level of dividends. We then estimate the following regression:

$$(8)\quad \text{CAR}_i = \alpha + \beta\,\text{INCREASE}_i + \gamma\,\text{INVESTORS\_``PREFER''\_INCREASE}_i + \delta' x_i + \varepsilon_i,$$

[12]The instruments for the *Catering Index* are the TARGET_PAYOUT_DISPERSION proxies, as well as the additional limits to catering proxies discussed in Section III.A.

[13]Dividend decreases and omissions are in general a much rarer event, and might be associated with financial distress (see also, e.g., Allen and Michaely (2003)). For these reasons, we omit them from this test.

where the dependent variable is the announcement return, INCREASE is an indicator variable for dividend increases (as opposed to dividend continuations), and x is the vector of control variables used throughout. If the market reacts better to changes in dividend policy that result in increased catering, we should expect a positive coefficient on the INVESTORS_“PREFER”_INCREASE.

This is indeed what we find, as illustrated by the estimates reported in Table 8. The result is robust across the different specifications, and it is also economically meaningful. The estimates of Table 8 imply that when the dividend increase results in increased catering, the announcement return is between 60 bp and 120 bp higher than for the average dividend increase, suggesting an economically important impact of catering.

TABLE 8

Catering and the Market Reaction to Dividend Announcements

Table 8 reports the estimates of a model:

$$\text{CAR}_i \quad = \quad \alpha + \beta\,\text{INVESTORS\_“PREFER”\_INCREASE}_i + \gamma'\,\text{INCREASE}_i + \delta' x_i + \varepsilon_i.$$

The dependent variable is the cumulative abnormal return (CAR) around the announcement of dividend increases or dividend continuations and is estimated as the cumulative residuals from a market model, over a 3-day (−1, +1) window in columns 1–3 and over a 7-day (−3, +3) window in columns 4–6. DIVIDEND_INCREASE is an indicator variable equal to 1 if the firm announces a dividend increase, and 0 otherwise. INVESTORS_“PREFER”_INCREASE is an indicator variable equal to 1 if the “revealed” preferred investor payout ratio (average payout ratio received by all the mutual funds holding a stake in the firm in the previous year) is lower than the firm’s payout ratio prior to the dividend announcement (i.e., if the dividend increase will result in an increase in the catering index (CI)). This indicator variable is defined separately for the three payout ratios used to compute CI: DPS/PRICE, DIV/EARNINGS, (DIV + REP)/EARNINGS. Here, x denotes the vector of control variables used throughout. The sample consists of the intersection between all announcements of ordinary quarterly, taxable cash dividends paid in U.S. dollars (CRSP distribution code 1232), excluding dividend decreases, omissions, and initiations, and the sample of all nonfinancial, nonpublic utility firms in the CRSP/Compustat merged database over the period 1980–2004, with market value of at least $10 million, with complete available information on all the variables, used throughout. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	Dependent Variable					
	CAR(−1, +1)			CAR(−3, +3)		
	Payout Ratio					
	DPS/ PRICE	DIV/ EARNINGS	(DIV + REP)/ EARNINGS	DPS/ PRICE	DIV/ EARNINGS	(DIV + REP)/ EARNINGS
Variable	1	2	3	4	5	6
INVESTORS_“PREFER”_INCREASE	0.0154**	0.0088**	0.0056	0.0129***	0.0082***	0.0058**
	2.48	*2.03*	*1.30*	*2.70*	*2.72*	*2.00*
DIVIDEND_INCREASE	0.0072***	0.0071***	0.0072***	0.0064***	0.0063***	0.0064***
	8.97	*8.86*	*9.02*	*11.14*	*10.92*	*11.04*
SIZE	0.0000	0.0000	0.0000	–0.0002	–0.0002	–0.0002
	0.09	*0.08*	*0.08*	*–1.41*	*–1.41*	*–1.42*
Tobin’s *Q*	–0.0020***	–0.0021***	–0.0021***	–0.0005	–0.0005	–0.0005
	–4.28	*–4.32*	*–4.30*	*–1.30*	*–1.35*	*–1.33*
DIVIDEND_PAYOUT	0.0396**	0.0389**	0.0384**	0.0241**	0.0236**	0.0234*
	2.22	*2.18*	*2.16*	*2.00*	*1.97*	*1.95*
LEVERAGE	–0.0004	–0.0004	–0.0004	0.0001	0.0001	0.0001
	–0.25	*–0.24*	*–0.25*	*0.10*	*0.11*	*0.11*
CASH_FLOW	–0.0091*	–0.0084*	–0.0087*	–0.0058*	–0.0052	–0.0055
	–1.81	*–1.68*	*–1.74*	*–1.73*	*–1.55*	*–1.62*
CASH_BALANCES	0.0001	0.0001	0.0001	0.0019	0.0019	0.0019
	0.04	*0.05*	*0.06*	*1.20*	*1.20*	*1.21*
Intercept	0.0048***	0.0048***	0.0049***	0.0026***	0.0026***	0.0026***
	3.71	*3.68*	*3.71*	*2.84*	*2.80*	*2.83*
No. of obs.	48,846	48,846	48,846	48,846	48,846	48,846
R^2	0.003	0.003	0.003	0.006	0.006	0.006

V. Conclusion

We study catering via the payout policy and the value impact of catering. We argue that there are limits to catering, which arise from the combination of dispersion in investor payout preferences and limits to arbitrage.

We create an index of catering based on the distance between the firm's actual payout policy and the payout policy received on average by its institutional shareholders. Our findings indicate that limits to catering have a tangible impact on the firm's ability to comply with its shareholders' payout preferences.

The empirical evidence suggests that the market appreciates catering. An increase in catering attracts greater investment by mutual funds and is associated with an increase in firm value. Furthermore, greater catering is associated with a better market reaction to an equity issue announcement. Finally, the market also reacts more positively to dividend changes that are consistent with an increase in catering.

Our findings shed new light on payout policy, focusing on what determines catering and on the impact of catering on firm value. To the extent that the firm faces shareholders with irreconcilable preferences, it effectively is confronted with a constraint that limits its ability to cater to investor payout preferences. Conversely, the ability to cater is associated with positive value effects.

Appendix. Variable Definitions

Payout Ratios, Catering Index (CI), and Related Variables

DPS/PRICE: Dividends per share (Compustat item 26) divided by the lagged year-end stock price (Compustat item 24).

DIVIDENDS/EARNINGS: Dividends (Compustat item 21) divided by earnings (Compustat item 18 + item 15 + item 50). Whenever the firm has negative earnings, this payout ratio is replaced by a 0, to focus on a positive payout ratio.

(DIVIDENDS + REPURCHASES/EARNINGS): Dividends (Compustat item 21) plus repurchases (Compustat item 115) divided by earnings (Compustat item 18 + item 15 + item 50). Whenever the firm has negative earnings, this payout ratio is replaced by a 0, to focus on a positive payout ratio.

Catering Index (CI): Let d be a generic payout ratio. Consider a mutual fund j. Define the desired payout on part of fund j in year t as the weighted average of the payout ratios that the fund receives from all the firms in which it holds an equity stake in year $t-1$: $d_{jt}^{D} = \sum w_{ijt-1} d_{it-1}$, where w_i denotes the percentage holding of the mutual fund in firm i, retrieved from Thomson Reuters. Now consider a given firm, and let D be the average desired payout of its shareholders (mutual funds): $D = \sum h_j d_j^D$, where h_j is the fraction of shares of the firm held by mutual fund j. Letting d be the firm's actual payout, the catering index (CI) is defined as $\mathrm{CI} = -|d - D|$. We compute the catering index based on several alternative payout ratios d: DPS/ PRICE, DIVIDENDS/EARNINGS, (DIVIDENDS + REPURCHASES)/EARNINGS (see above). In order to limit the impact of outliers, the *Catering Index* is Winsorized at the 5th percentile.

FH: Mutual fund holdings. We retrieve the mutual funds equity holdings data from Thomson Reuters. Let H be the percentage holdings of mutual funds in a given firm; then, following Falkenstein (1996), we define: $\mathrm{FH} = \log(1 + H)$.

DESIRED_PAYOUT_DISPERSION: Dispersion of the desired payouts, based on the payout ratios DPS/PRICE, DIVIDENDS/EARNINGS, (DIVIDENDS + REPURCHASES)/EARNINGS. It is the standard deviation of the "desired payouts" D (see above, definition of the catering index (CI)). The standard deviation is computed at the investment-style level, where the investment style is defined by crossing the size (market value of equity) and book-to-market dimensions based on the Fama-French (1997) break points, obtaining a 3 × 3 matrix.

Control Variables

SIZE: Firm size (natural logarithm of total assets, Compustat data item 6).

Tobin's *Q*: Define: Preferred stock = Preferred stock – liquidating value (Compustat item 10) [or Compustat item 56, redemption value, or Compustat item 130, carrying value]; Book Equity (BE) = Stockholders' equity (Compustat item 216) [or Common equity (Compustat item 60) + Preferred stock – carrying value (Compustat item 130); or Total assets (Compustat item 6) – Total liabilities (Compustat item 181)] – Preferred stock + Deferred taxed and investment tax credits (Compustat item 35, if available) – Net Postretirement Benefit Asset (Compustat item 330, if available); Market Equity (ME) = Closing price at fiscal year-end (Compustat item 199) × Shares outstanding (Compustat item 25); Market value of the firm (MV) = Total assets (Compustat item 6) – BE + ME; then Q = MV/BE.

DIVIDEND_PAYOUT: Common dividends (Compustat item 21) + Preferred dividends (Compustat item 19) divided by lagged Total assets (Compustat item 6).

CASH_FLOW: Depreciation and amortization (Compustat item 14) + Income before extraordinary items (Compustat item 18) divided by lagged Total assets (Compustat item 6).

LEVERAGE: Long-term debt (Compustat item 9) + Short-term debt (Compustat item 34) divided by Long-term debt + Short-term debt + Stockholders' equity (Compustat item 216).

CASH_BALANCES: Cash and short-term investments (Compustat item 1) divided by lagged Total assets (Compustat item 6).

SPREAD: Spread between the rate on AAA corporate bonds and the risk-free interest rate. The AAA bond rate is obtained from the Federal Reserve Statistical Release (available at: https://www.federalreserve.gov/releases/h15/data.htm). The risk-free rate is obtained from Kenneth French's Web site (http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html).

OFFER_SIZE: Natural logarithm of the value of the seasoned equity offering (SEO), retrieved from the Security Data Corporation's (SDC) New Issues tape.

RUNUP: Return over the 6 months prior to the SEO announcement date. The SEO announcement date is retrieved from the SDC New Issues tape. Stock return data are retrieved from CRSP.

DIVIDEND_PREMIUM: Baker and Wurgler's (2004) dividend premium. It is equal to the difference in logs of the average market-to-book values of dividend payers and nondividend payers. Downloadable from Jeffrey Wurgler's Web site (http://pages.stern.nyu.edu/∼jwurgler)

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