



## Dividend Signalling And Sustainability

By: **J. Hobbs** and M.I. Schneller

### Abstract

We examine the 'disappearing dividends' era documented by Fama and French (2001) with respect to the traditional theory of signalling, wherein the positive signal is one of high future cash flows and continued payments. We report several new findings. First, during the disappearing dividends era, dividends vanished not only because they were less frequently initiated – the oft-cited reason – but also because, once initiated, they were less likely to be sustained. Second, we find that although future performance does increase with dividend sustainability, performance is merely average for permanent payers and poor for temporary payers. Third, we find that the market responded favourably to initiations but did not distinguish ex-ante between short-run and long-run payers. Fourth, we find that despite the market's similar treatment of shorter- and longer-term payers, dividend sustainability was in fact predictable out of sample, using information strictly available to investors at the time of the announcement. Fifth, we find that performance is predictable through sustainability; the firms we predict to become permanent payers significantly outperform their counterparts in subsequent years. Overall, our findings run counter to the traditional signalling theory of dividends in terms of both overall firm performance and the market's reaction to initiations.

**Hobbs J**, Schneller MI. Dividend signalling and sustainability. *Applied Financial Economics*. 2012;22(17):1395-1408. doi:10.1080/09603107.2012.654909. Publisher version of record available at: <https://www.tandfonline.com/doi/full/10.1080/09603107.2012.654909>

# Dividend signalling and sustainability

J. Hobbs<sup>a,\*</sup> and M. I. Schneller<sup>b</sup>

<sup>a</sup>*Department of Finance, Banking and Insurance, Appalachian State University, Boone, NC 28608, USA*

<sup>b</sup>*Department of Finance, Insurance and Business Law, Virginia Tech, Blacksburg, VA, USA*

---

We examine the ‘disappearing dividends’ era documented by Fama and French (2001) with respect to the traditional theory of signalling, wherein the positive signal is one of high future cash flows and continued payments. We report several new findings. First, during the disappearing dividends era, dividends vanished not only because they were less frequently initiated – the oft-cited reason – but also because, once initiated, they were less likely to be sustained. Second, we find that although future performance does increase with dividend sustainability, performance is merely average for permanent payers and poor for temporary payers. Third, we find that the market responded favourably to initiations but did not distinguish *ex-ante* between short-run and long-run payers. Fourth, we find that despite the market’s similar treatment of shorter- and longer-term payers, dividend sustainability was in fact predictable out of sample, using information strictly available to investors at the time of the announcement. Fifth, we find that performance is predictable through sustainability; the firms we predict to become permanent payers significantly outperform their counterparts in subsequent years. Overall, our findings run counter to the traditional signalling theory of dividends in terms of both overall firm performance and the market’s reaction to initiations.

**Keywords:** dividends; signalling; sustainability; market reaction

## I. Introduction

The signalling theory of dividends posits that firms convey their optimism for the future by initiating dividend payments. The basis of this theory derives from a study by Lintner (1956), in which managers from 28 companies were interviewed to determine which factors were most instrumental in firms’ payout policies. Lintner found that not only were dividends dependent upon the amount of cash needed

to finance projects in the short-term, but that they also represented management’s belief in the sustainability of company earnings over the long-term. Thus, managers tended to increase or initiate payouts only when they believed that subsequent earnings would be high.

Empirical evidence indicates that investors respond favourably to dividend increases and initiations; the stock prices of firms that initiate dividends tend to increase around the time of the initiation

\*Corresponding author. E-mail: hobbsjc@appstate.edu

announcement (see Asquith and Mullins, 1983; Healy and Palepu, 1988). Likewise, the signalling theory implies that any subsequent decrease or elimination of dividends will be viewed with extreme disfavour by the financial markets (Healy and Palepu, 1988; Michaely *et al.*, 1995; Benartzi *et al.*, 1997). The perception that the market punishes dividend omitting firms more than it rewards dividend initiating firms is, according to Brav *et al.* (2005), the primary cause of dividend ‘conservatism’ – the reluctance of management to increase payments if it feels there is a chance that long-run earnings will not be able to sustain those payments.

In this study, we address five empirical questions in the period preceding the ‘reappearing dividends’ trend documented by Julio and Ikenberry (2004). First, just how sticky are dividends in light of the signalling theory? Second, how closely related is the sustainability of dividends to the future operating performance of the firm? Third, does the market react differently to the initiation announcements of long-term payers than it does to the initiation announcements of short-term payers? Fourth, can the market distinguish between long-term and short-term payers at the time of the initial dividend, or are subsequent payments determined merely by luck or some other unpredictable factor? Fifth, to the extent that dividend sustainability can be predicted, can long-run operating performance also be predicted?

## II. Data and Methodology

To construct our sample, we begin with monthly Center for Research in Security Prices (CRSP) data from 1962 through 2000. For every month within this period, we group all firms into two categories: those that pay dividends and those that do not. A firm is considered to be paying dividends if, at any time during the preceding 12 months, it has paid any US cash dividends, which are denoted by distribution codes ranging from 1200 to 1299.<sup>1</sup> Other types of distributions, including liquidations, foreign currency dividends, and payments related to mergers and acquisitions are not included for the purpose of this study.

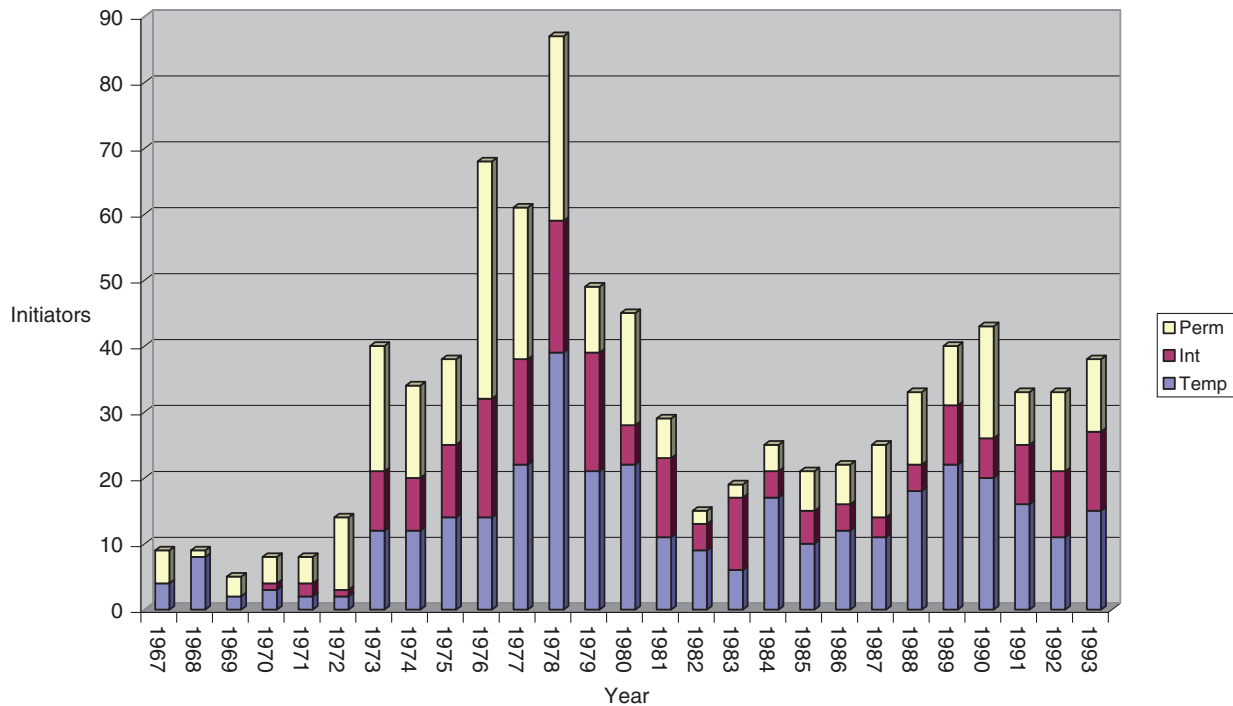
<sup>1</sup>The distribution code gives an indication of the type and expected frequency of a company’s payments and is utilized extensively by Brickley (1983). The most common distribution codes encountered in this study are the following: 1212 – unspecified frequency, 1232 – quarterly dividend, 1242 – semi-annual dividend, 1252 – annual dividend, 1262 – year-end or final dividend, 1272 – extra or special dividend, and 1292 – nonrecurring dividend. It should be noted that the distribution code is generally only accurate in the short-run; commonly, firms will declare their dividends to be annual and then switch to quarterly payments shortly afterward, or vice versa. The distribution code does, however, tend to be consistent with newspaper reports of management’s stated intentions around the time of the initial dividend announcement.

We then require that each firm had gone at least 5 years without paying any dividends prior to the initiation of payments. Similar to Asquith and Mullins (1983) and Healy and Palepu (1983), the requirement of a lengthy nonpayment period prior to initiation suggests that the ensuing dividend is more of a surprise to investors. This initial dividend need not be the first in the company’s history, however; it can also represent a resumption of payments after a hiatus of at least 5 years. For simplicity, we refer to the date on which this resumption or initiation was announced as the ‘initiation announcement date’, regardless of whether the dividend constituted an initiation or merely a resumption of payments.

We then determine how long each company continued to pay dividends following initiation. Companies that paid dividends for 3 years or less (including the initial dividend) are classified as ‘temporary payers’, while companies that paid for more than three but less than or equal to 7 years were classified as ‘intermediate payers’. Companies that paid dividends for more than 7 years were considered to be ‘permanent payers’. All companies with nonmissing initiation announcement dates were then merged with the Compustat financial database in order to obtain accounting figures for long-run performance evaluation. At this point, the sample consists of 929 firms. Although we later omit financial firms, utilities, and intermediate payers for the purpose of testing, it is in the interest of examining a larger, more comprehensive group of dividend initiators that we provide some descriptive statistics for these 929 firms in the next section of this article.

## III. Descriptive Statistics

DeAngelo *et al.* (2004) report that the aggregate level of real dividends was 16.3% higher in 2000 than it was in 1978, but find that this is the result of dividends becoming increasingly concentrated rather than widely distributed. Although the percentage of companies paying dividends decreased by the end of the twentieth century (a finding consistent with Fama and French (2001), who document that between 1978 and 1999 the percentage of firms paying dividends decreased from 66.5% to 20.8%), the dividends



**Fig. 1. Number of dividend initiators per year and the proportion of temporary, intermediate and permanent Initiators from each year**

themselves generally became much larger. Julio and Ikenberry (2004) show a reversal of this trend; since 2001, more firms have begun making payments, but the percentage of US firms that pay dividends is still far less than it was in the 1970s.

There are two potential reasons for this dramatic decline in the percentage of firms that pay dividends – companies may have become less likely to initiate payments, or companies that do initiate may have become less likely to continue making payments afterward. Figure 1 corroborates the findings of Fama and French and also lends support to the first explanation; between 1978 and 1982, the number of dividend initiating firms drops from a high of 87 to a low of 15. Though the number of initiating firms begins to increase again after 1982, there are still fewer of them in any 2-year period between 1983 and 1993 than there were in 1978 alone, notwithstanding the sharp increase in new listings that occurred after 1978.

In addition to the results presented in Fig. 1, we also find evidence to support the second explanation for the ‘disappearing dividends’ phenomenon. Between 1967 and 1978, there were 381 companies that initiated dividends. Of these, 134 stopped paying within 3 years, compared to 86 that paid for between 3 and 7 years and 161 that paid for more than 7 years. Thus, prior to 1979, if a firm initiated dividends, it

was more likely to continue paying for more than 7 years than it was to stop paying within 3 years. However, for the 470 dividend initiations between 1979 and 1993 (the last year during which a company entering our sample can fall under any of the three categories), temporary payers outnumbered permanent payers 221 to 132, with the other 117 eventually being classified as intermediate payers. Thus, the fact that the average company was less likely to be paying dividends in the mid-1990s than it was in the mid-1970s appears to stem from two trends that have taken place over that period of time. Consistent with Fama and French (2001), companies have become less likely to initiate dividends. In addition to this first explanation, however, it appears that the dividends themselves have become less ‘sticky’ – once initiated, they are less likely to be sustained for many years than they were during the 1970s.

#### **IV. Length of Payments and Long-Run Operating Performance**

The signalling theory posits that companies that initiate dividends are sending a positive signal to the capital markets regarding high future cash flows and profits. The credibility of this signal rests with the

prevailing view (c.f. Lintner, 1956) that the initiation of dividends represents a commitment to sustained payments. Therefore, the firms that send out a credible signal – that is, the firms whose expected future cash positions are high enough to enable sustained payments – should be the firms that are most rewarded by investors at the time of the initiation announcement. Similar to Healy and Palepu (1986), DeAngelo *et al.* (1996), and others, we examine the performance of firms in the years surrounding dividend initiation. Our study differs from theirs, however, in that we seek to determine the relationship between the length of payments and the operating performance of initiating firms, rather than examine the *ex-post* performance of all initiating firms regardless of payment length. By separating the companies in this sample into two groups based on payment length, we can more deeply explore the credibility aspect of the signalling theory.

We begin by identifying several variables related to firm profitability, investment and growth opportunity. Measures of profitability include: (1) operating income before depreciation, (2) cash flow (defined as operating income before depreciation minus interest expense, taxes and preferred dividends), and (3) net income. Each of these three measures of profitability is standardized separately by assets, sales and common equity, yielding a total of nine different ratios. For simplicity, the results reported in this article refer to return on assets, defined as operating income before depreciation scaled by total assets, unless otherwise stated. The primary measure of growth and investment that we use is the ratio of the market value to the book value of the firm's assets (hereafter, MTBA). All variables were obtained using the Compustat database from Wharton Research Data Services. Finally, we eliminate all financial firms and utilities as well as all intermediate payers. Our final sample consists of 553 companies that initiated dividends between 1967 and 2000. Of these 553 companies, 240 are classified as permanent payers and 313 are classified as temporary payers.

Initially we examine the signalling theory along two dimensions. First, similar in spirit to DeAngelo *et al.* (1996), we investigate the full sample of dividend initiating firms. The results in Table 1 are generally inconsistent with the signalling theory. After dividend initiation, Return On Assets (ROA) (Panel A) tends to decrease to a level similar to that which existed a few years before initiation and before much of the run-up in earnings. The other eight performance measures (in Panel B) also display a considerable decline in the subsequent years. Signed-rank tests of

**Table 1. Operating performance around dividend initiations**

Year	N	Mean	Median		
<i>Panel A<sup>a</sup></i>					
-5	532	11.46%	11.73%		
-4	546	12.23%	11.92%		
-3	547	12.72%	12.58%		
-2	548	13.64%	13.32%		
-1	548	15.77%	15.10%		
0	528	16.02%	15.76%		
+1	494	13.99%	13.92%		
+2	458	13.20%	13.25%		
+3	438	13.15%	13.70%		
+4	432	11.98%	12.76%		
+5	415	12.06%	13.54%		
Variable	N	Median	Signed-rank		p-value
<i>Panel B<sup>b</sup></i>					
ROA	492	-1.30%	-17 328		< 0.0001
ROE	485	-2.42%	-12 908		< 0.0001
ROS	492	-0.57%	-9689		0.0021
CFA	482	-0.65%	-14 736		< 0.0001
CFE	475	-1.84%	-13 418		< 0.0001
CFS	482	-0.27%	-9107		0.0028
NIA	492	-1.20%	-19 449		< 0.0001
NIE	485	-2.52%	-18 124		< 0.0001
NIS	492	-0.56%	-13 883		< 0.0001

*Notes:* <sup>a</sup>Average annual ROA from 5 years before initiation through 5 years after for the full sample of temporary and permanent payers.

<sup>b</sup>Difference between the median operating performance 5 years after initiation and performance during the year of initiation for the full sample (if Year 5 data are missing, the last year for which data are available is used instead). We use nine performance measures: return on assets, equity, and sales, cash flow to assets, equity, and sales, and net income to assets, equity and sales. We include signed-rank *S*-statistics and *p*-values for the median of each return measure.

the median change in performance (we focus much of this study on medians rather than means owing to outliers in some of the data, particularly for those measures that are scaled by sales) find a highly significant decrease following initiation. Thus it appears that, in the main, dividends do not portend a sustainably elevated level of performance as posited by the traditional signalling theory.

However, even though there is a decline in performance for the overall sample, it may still be the case that dividend sustainability relates to performance. Table 2 compares the two groups of firms ('permanent' and 'temporary' payers) over time. For each of the 5 years prior to initiation, the ROA of the average permanent payer was higher than that of the average temporary payer. However, the two groups experienced simultaneous run-ups during these years;

**Table 2. Operating performance around dividend initiations, by group**

Year	<i>N</i>	Perm. median performance	<i>N</i>	Temp. median performance	<i>p</i> -value			
<i>Panel A<sup>a</sup></i>								
-5	230	13.47%	302	10.07%	0.0003			
-4	238	13.71%	308	10.56%	0.0003			
-3	239	13.39%	308	11.95%	0.0072			
-2	239	14.00%	309	12.61%	0.0434			
-1	239	15.84%	309	14.61%	0.1305			
0	238	17.44%	290	14.16%	< 0.0001			
+1	238	17.15%	256	10.56%	< 0.0001			
+2	239	16.99%	219	8.64%	< 0.0001			
+3	238	16.32%	200	9.01%	< 0.0001			
+4	239	15.68%	193	9.02%	< 0.0001			
+5	239	15.08%	176	10.43%	< 0.0001			
Variable	<i>N</i>	Chg. Perm	<i>p</i> -value	<i>N</i>	Chg. Temp	<i>p</i> -value	Perm-Temp	<i>p</i> -value
<i>Panel B<sup>b</sup></i>								
ROA	238	-0.76%	0.0085	254	-2.20%	< 0.0001	1.45%	0.0099
ROE	238	-1.65%	0.0399	247	-5.60%	0.0002	3.95%	0.0350
ROS	238	-0.24%	0.7170	254	-1.21%	0.0002	0.98%	0.0046
CFA	233	-0.16%	0.2867	249	-1.73%	< 0.0001	1.89%	0.0003
CFE	233	-0.28%	0.3815	242	-5.29%	< 0.0001	5.58%	0.0002
CFS	233	0.04%	0.4770	249	-1.04%	< 0.0001	1.08%	0.0001
NIA	238	-0.76%	0.0028	254	-2.89%	< 0.0001	3.66%	0.0012
NIE	238	-0.99%	0.0027	247	-4.65%	< 0.0001	5.64%	0.0022
NIS	238	-0.12%	0.2430	254	-1.32%	< 0.0001	1.44%	0.0011

Notes: <sup>a</sup>Median annual ROA from 5 years before initiation through 5 years after for the separate samples of temporary and permanent payers.

<sup>b</sup>Median difference between the operating performance 5 years after initiation and performance during the year of initiation for the full sample (if Year 5 data are missing, the last year for which data are available is used instead). We use nine performance measures: return on assets, equity, and sales, cash flow to assets, equity, and sales, and net income to assets, equity and sales. We include signed-rank *S*-statistics and *p*-values for the median of each return measure.

median ROA was about 4% higher in the year of initiation than it had been 5 years earlier. Following initiation, however, the groups' paths diverge. While the permanent companies experience a mild tapering of profitability between year zero and year five, the temporary companies' ROA drops by nearly half. By the end of the second year following initiation, the ROA of the typical permanent payer is nearly twice that of the typical temporary payer. Panel B shows that regardless of which performance measure we use, the temporary payers fare worse (even relative to their lower starting numbers) after initiation than do the permanent payers.

This result extends the findings of DeAngelo and DeAngelo (1990) to dividend omissions and shows that firms with declining operating performance often cease making payments very quickly after initiation. On balance, we do not find support for the signalling theory's implication that dividends signal a rosy future for the firms that initiate them. For the full

sample and even for the subsample of permanent payers, average ROA actually decreases in the 5 years following initiation. These findings are consistent with Grullon *et al.* (2005), who find little correlation between changes in dividends and subsequent firm profitability. This suggests that at least on the basis of *ex-post* performance, the initiation of dividends should actually convey negative news to the market. However, our findings go beyond these studies in that they also directly address dividend sustainability. We find that despite the lackluster post-initiation performance of the full sample, dividend sustainability is most definitely related to performance. While the performance results of the permanent payers are mixed (median ROA falls but remains higher than it was prior to Year -1), those of the temporary payers are economically and statistically much worse. This is an interesting finding, for it raises questions about the market's reaction to dividends and the predictability of continued payments.



**Table 3. Announcement period returns**

Variable	Permanent		Temporary		Perm-Temp	<i>t</i> -statistic	<i>p</i> -value
	<i>N</i>	Mean	<i>N</i>	Mean			
(−1, −10)	237	1.64%	305	1.76%	−0.12%	−0.13	0.8934
(−1, +1)	237	3.10%	305	3.27%	−0.17%	−0.28	0.7812
(−2, +2)	237	3.67%	305	3.86%	−0.19%	−0.27	0.7884

*Notes:* Comparison of the announcement-period abnormal returns of the permanent sample to those of the temporary sample. Returns are derived from the market model of abnormal returns and are cumulated using the buy-and-hold method.

## V. Length of Payments and the Announcement Period Stock Price Effect

The previous findings show that the firms that go on to become permanent payers perform better than those that become temporary payers. Therefore, even though the group of permanent payers does not perform particularly well in the post-initiation period, there is still evidence that dividend sustainability is directly related to future performance. Given this result and the prevailing view that dividend initiation is a positive signal in part because of the implicit suggestion that the payments will persist, we now examine whether investors distinguish, at the time of the initiation announcement, between temporary and permanent payers.

Table 3 shows the announcement-period abnormal returns of permanent and temporary companies for three different window lengths. The first window (−1, −10), indicates an abnormal return calculation for the 10 days just before the initiation announcement. The other windows (−1, +1) and (−2, +2), respectively represent the 3 days and 5 days surrounding the initiation announcement. To mitigate the biases associated with bid-ask bounce and nonsynchronous trading, the average abnormal returns shown for each event window are calculated using the buy-and-hold method. Sufficient data were available to calculate abnormal returns for 305 of the 313 firms in the temporary sample and for 237 of the 240 firms in the permanent sample.

For the permanent payers, Table 3 shows 3-day and 5-day average abnormal returns of 3.10% and 3.67%, respectively. For the temporary payers, the 3- and 5-day returns are 3.27% and 3.86%, respectively. All these figures are statistically significant at the 1% level, constituting further evidence that investors respond favourably to dividend initiations. Additionally, both groups report significant and positive abnormal returns for the 10 days immediately preceding the initiation announcement, suggesting that at least some of the news regarding the

dividend is being leaked prior to the announcement itself.

When the abnormal returns of the permanent sample are compared to those of the temporary sample, we find that temporary payers experience slightly higher abnormal returns for each of the three event windows. However, the difference is not statistically significant, and thus it does not appear that investors treat temporary firms differently from permanent firms at the time of the initiation announcement.

It is important, at this juncture, to address the issue of stock repurchases as a potential substitute for dividend payments. Much research has been conducted in this area, including studies by Grullon and Michaely (2002) and Brav *et al.* (2005). In particular, we focus on our sample of temporary payers in an effort to answer two questions: first, how pervasive was the substitution of repurchases for cash dividends over our period of study?, and second, did the existence of a repurchase program impact our results? This is particularly important for the firms we designate as ‘temporary payers’ – if those firms ceased paying dividends while at the same time increased or initiated repurchases, then in reality they simply replaced one type of cash payment with another. We found that of the 313 firms in the temporary sample, 159 (50.8%) had a repurchase program in place during the 3 years prior to the omission of dividends. In the 3-year period following omission, only 34 of those 159 firms increased the number of shares repurchased. Of the 154 firms that did not have share repurchase programs in place, just 36 initiated them in the 3 years after dividends were eliminated. Additionally, more companies actually decreased the number of shares repurchased after omission than increased them. To be sure, however, we alternatively excluded those temporary payers from the sample that initiated or increased stock repurchases and then replicated Tables 1–3 (as well as Tables 4–6 from the following sections of this study) and obtained the same results as before. Thus stock

**Table 4. Comparison of permanent companies to temporary companies on the basis of pre-initiation period and dividend-specific information**

Variable	Permanent		Temporary		Perm-Temp	p-value
	N	Mean	N	Mean		
<i>Panel A: Means</i>						
Mean ROA	239	14.37%	310	12.19%	2.18%	0.0044
Trend ROA	239	3.31%	308	5.13%	-1.82%	0.1263
Log assets (-1)	239	4.137	311	3.807	0.330	0.0094
MTBA (-1)	233	1.291	296	1.334	-0.043	0.5949
Debt ratio (-1)	233	32.17%	296	31.47%	0.71%	0.7415
Dividend yield	237	1.64%	311	9.16%	-7.53%	0.0006
Specified	228	0.5877	247	0.4696	0.1181	0.0099
Regular	240	0.9500	313	0.7891	0.1609	< 0.0001
<i>Panel B: Medians<sup>a</sup></i>						
Mean ROA	239	14.19%	310	11.91%	2.28%	0.0003
Trend ROA	239	2.88%	308	3.57%	-0.69%	0.1126
Log assets (-1)	239	3.978	311	3.656	0.322	0.0089
MTBA (-1)	233	1.027	296	1.039	-0.012	0.7991
Debt ratio (-1)	233	29.87%	296	28.41%	1.46%	0.6617
Dividend yield	237	1.28%	311	1.67%	-0.39%	0.0003
Specified	228	1.000	247	0.000	1.000	0.0104
Regular	240	1.000	313	1.000	0.000	< 0.0001

*Notes:* Comparison of the pre-initiation period and dividend-specific characteristics of the temporary sample to those of the permanent sample. Mean ROA represents the firm's mean return on assets during the 5 years immediately preceding the initial dividend announcement. Trend ROA represents the change in the firm's annual ROA over the pre-initiation period. Log assets, market-to-book ratios, and debt ratios were calculated for the year immediately preceding the initiation announcement. Dividend yield has been annualized by incorporating the frequency of payments stated by the distribution code. 'Regular' is a dichotomous variable that takes a value of 1 if the dividend is not announced to be 'extra', 'special' or 'one-time', and 'Specified' is a dichotomous variable that takes a value of 1 if the dividend is of a specified frequency and a value of 0 if the dividend is of an unspecified frequency but is not announced to be 'extra', 'special' or 'one-time'.

<sup>a</sup>The *t*-approximation to the Wilcoxon rank-sum test is then used to compare the average rank of the permanent companies to the average rank of the temporary companies.

repurchases appear to have little if any impact on the findings of our study.

## VI. Cross-Sectional Determinants of the Duration of Payments

Up to this point, we have found that even though permanent payers outperform temporary payers in the long run, investors seem not to distinguish between the two groups *ex-ante*. This raises the following question: can the duration of dividend payments be predicted using only information that is available at the time of the announcement, or is the separation between temporary and permanent payers simply an *a posteriori* phenomenon, whereby certain companies become luckier and/or more efficiently run than others, independent of the previous decision to initiate dividends? If the duration of payments can in

fact be predicted, then the traditional signalling explanation for the market's reaction to dividends can be further called into question. To address this issue, we begin by selecting a few variables that are available to investors on or before the date of the initiation announcement. The investors could then use this information to form opinions regarding the announcement.

The first variables that we select are dividend-specific. Each dividend that a firm pays is accompanied by a 'distribution code' at the time of its announcement. This code states whether the dividend is to be paid quarterly, semi-annually or annually, or whether it is an 'extra' or 'special' distribution and not likely to be repeated. Brickley (1983) assigns these distribution codes to two categories: 'Specially Designated Dividends' (SDDs), and regular dividends. SDDs are dividends that the distribution codes label as extra, special or nonrecurring, while regular dividends can be expected to continue on a quarterly,



**Table 5. Comparison of permanent companies to temporary companies on the basis of pre-initiation period SD of profitability**

Variable	Permanent		Temporary		Perm-Temp	<i>p</i> -value
	<i>N</i>	Mean	<i>N</i>	Mean		
<i>Panel A: Means</i>						
SDROA	54	1.88%	134	2.66%	-0.78%	0.0023
SDROE	58	5.16%	144	7.38%	-1.82%	0.0420
SDROS	65	5.54%	149	37.89%	-32.35%	0.0894
SDCFA	41	1.33%	105	1.99%	-0.66%	0.0014
SDCFE	45	3.16%	114	5.95%	-2.79%	0.0014
SDCFS	50	4.76%	118	43.27%	-38.51%	0.1063
SDNIA	77	2.38%	179	3.96%	-1.58%	0.0817
SDNIE	154	13.35%	231	10.37%	2.98%	0.6260
SDNIS	201	19.13%	252	41.48%	-22.35%	0.2209
<i>Panel B: Medians<sup>a</sup></i>						
SDROA	54	1.66%	134	1.91%	-0.25%	0.0256
SDROE	58	3.61%	144	4.71%	-1.10%	0.0286
SDROS	65	4.65%	149	6.08%	-1.43%	0.0020
SDCFA	41	1.12%	105	1.52%	-0.40%	0.0328
SDCFE	45	2.55%	114	3.38%	-0.83%	0.0075
SDCFS	50	3.34%	118	5.10%	-1.76%	0.0133
SDNIA	77	1.67%	179	1.91%	-0.24%	0.0359
SDNIE	154	2.66%	231	3.81%	-1.15%	0.0029
SDNIS	201	3.74%	252	5.12%	-1.38%	0.0007

*Notes:* Comparison of the pre-initiation period volatility of the temporary sample to that of the permanent sample. These SDs are derived from Compustat quarterly data and represent the SD of a firm's profitability during the pre-period. SD is calculated only for those firms that have data available for at least 15 of the 20 quarters immediately preceding the initiation announcement. SDROA, SDROE, SDROS, SDCFA, SDCFE, SDCFS, SDNIA, SDNIE and SDNIS represent the pre-initiation period SD of return on assets, return on equity, return on sales, cash flow on assets, cash flow on equity, cash flow on sales, net income on assets, net income on equity and net income on sales, respectively.

<sup>a</sup>The *t*-approximation to the Wilcoxon rank-sum test is then used to compare the average rank of the permanent companies to the average rank of the temporary companies.

semi-annual or annual basis. We expand upon Brickley's analysis and divide the 'regular' category into two groups called 'specified frequency' and 'unspecified frequency'. 'Specified frequency' dividends are those specified to be quarterly, semi-annual or annual by their distribution codes. 'Unspecified frequency' dividends do not have a specified frequency of payments (e.g. quarterly, annual), but they are not labelled as extra or nonrecurring, either. Assuming that the firm's announcements regarding the frequency of future dividend payments have at least some credibility, we hypothesize that a firm is most likely to become a permanent payer when its initial dividend is of a specified frequency. Firms that do not specify the frequency of their initial dividends are less likely to become permanent payers, therefore, and initial dividends labelled 'extra', 'special' and 'nonrecurring' are the least likely to become permanent.

The second dividend-specific variable we select is the dividend yield. We define dividend yield to be the

size of the dividend (per share) divided by the stock price on the date of the initiation announcement. We then annualize the dividend yield on the basis of the stated frequency of payments; if the dividend is announced to be quarterly then we multiply the yield by four, and if the dividend is announced to be semi-annual then we multiply the yield by two. We hypothesize that the higher the dividend yield, the less likely the firm will be to sustain payments over a long period of time, owing to the fact that natural fluctuations in a firm's cash flow will make a high cash outlay more difficult to maintain than a low cash outlay.

For the firm-specific variables, we use measures of operating performance for the period leading up to the initiation announcement, as well as the natural logarithm of total assets, the debt ratio and the market-to-book ratio, to try and differentiate the two groups from one another. Although we have nine different measures of performance, all results reported in this article are based, for the sake of

**Table 6. Comparison of permanent companies to temporary companies on the basis of pre-initiation period risk-adjusted profitability**

Variable	Permanent		Temporary		Perm-Temp	p-value
	N	Mean	N	Mean		
<i>Panel A: Means</i>						
ROA/SDROA	54	12.21	134	7.75	4.46	0.0017
ROE/SDROE	58	11.81	144	7.05	4.76	0.0002
ROS/SDROS	65	17.31	149	9.85	7.45	0.0006
CFA/SDCFA	41	8.75	105	6.16	2.59	0.0327
CFE/SDCFE	45	9.68	114	5.87	3.81	0.0012
CFS/SDCFS	50	12.27	118	7.39	4.88	0.0036
NIA/SDNIA	77	5.63	179	3.69	1.94	0.0334
NIE/SDNIE	154	5.56	231	3.72	1.84	0.0042
NIS/SDNIS	201	6.31	252	4.25	2.06	0.0016
<i>Panel B: Medians<sup>a</sup></i>						
ROA/SDROA	54	8.99	134	6.28	2.71	0.0005
ROE/SDROE	58	8.26	144	6.25	2.01	0.0000
ROS/SDROS	65	12.39	149	7.67	4.71	0.0000
CFA/SDCFA	41	7.20	105	4.70	2.50	0.0100
CFE/SDCFE	45	8.06	114	4.73	3.33	0.0006
CFS/SDCFS	50	9.44	118	5.34	4.09	0.0006
NIA/SDNIA	77	3.59	179	2.08	1.51	0.0184
NIE/SDNIE	154	3.60	231	2.48	1.12	0.0034
NIS/SDNIS	201	3.83	252	2.26	1.57	0.0002

*Notes:* Comparison of the pre-initiation period volatility of the temporary sample to that of the permanent sample. These SDs derive from Compustat quarterly data and represent the SD of a firm's profitability during the pre-initiation period. SD is calculated only for those firms that have data available for at least 15 of the 20 quarters immediately preceding the initiation announcement. SDROA, SDROE, SDROS, SDCFA, SDCFE, SDCFS, SDNIA, SDNIE and SDNIS represent the pre-initiation period SD of return on assets, return on equity, return on sales, cash flow on assets, cash flow on equity, cash flow on sales, net income on assets, net income on equity and net income on sales, respectively.

<sup>a</sup>The *t*-approximation to the Wilcoxon rank-sum test is then used to compare the average rank of the permanent companies to the average rank of the temporary companies.

simplicity, on ROA. We examine performance in two ways; first, we compute the average return on assets over the 5 years leading up to the initiation announcement, and second, we take the difference between year  $-5$  and year  $-1$ . Total assets, the debt ratio, and the market-to-book ratio are calculated for the year immediately preceding the initiation announcement.

Table 4 reports the results from univariate tests of the differences between the means of the permanent sample and those of the temporary sample in Panel A and the differences between the medians of the two groups in Panel B. Many of these variables are in fact useful for predicting whether a firm that is initiating dividends will go on to become a permanent payer. Large firms, which tend to be well established and have high cash balances, are more likely than small firms to continue making payments for 7 years or more. Firms with low dividend yields and thus a less demanding cash commitment are also more likely to become permanent payers. Companies that specify

the frequency of their payments to be quarterly, semi-annual or annual are much more likely to become permanent payers than are companies that make no specification at all, and these two groups together are much more likely to become permanent payers than companies that declare their dividends to be extra, special or one-time payments. Finally, the operating performance of firms during the pre-initiation period can be used to predict the sustainability of dividends after initiation.

We hypothesize that another determinant of the sustainability of dividends is earnings volatility. Grullon *et al.* (2002) find that increases in dividends correspond to decreases in systematic risk. Additionally, the firms that increase dividends do not increase their capital expenditures and in subsequent years experience a decrease in profitability. This suggests that dividend increases signal, above all else, a maturing on the part of the firm. We address this topic from a slightly different angle – we examine the firm in terms of its total risk as measured by the

SD of profitability in the pre-initiation period. For the purpose of this study, it is preferable to examine total risk to systematic risk for two reasons. First, because unsystematic risk affects the short- and long-term financial position of firms, it should not be ignored. Second, it is primarily the managers who determine their firms' dividend policies rather than the market as a whole, and these managers should incorporate firm-specific risk into their decisions. All else equal, a firm with a high degree of unsystematic risk is just as likely to be forced to cease dividend payments as a firm with less unsystematic risk but the same amount of total risk.

To calculate the volatility of corporate profits, we use quarterly data from Compustat to measure the SD of profitability over the 5 years immediately preceding the initiation announcement. Only firms that had data for at least 15 of the 20 pre-initiation quarters were included in this analysis. We hypothesize that since dividend sustainability requires stability of earnings (a view consistent with Lintner (1956) and Bhattacharya (1979)), the firms whose profits fluctuated most severely in the pre-initiation period are less likely to become permanent payers than are the less volatile firms. To adjust for industry effects, we also subtract each company's industry-average SD, based on the first two digits of its Standard Industrial Classification (SIC) code, from its own SD over the same time period. Table 5 supports this hypothesis; the temporary payers in the sample had significantly higher pre-initiation period performance volatility than did the permanent payers. Adjusting for industry effects mitigates this difference to some degree, although for all variables the temporary payers' SDs are higher than the permanent payers' SDs, and these differences generally remain significant.

Last, we combine the concepts of risk and return to produce another univariate separation between permanent payers and temporary payers. Even on a theoretical level, the stability of earnings is not a completely satisfactory predictor of dividend sustainability, as the following example illustrates. Consider two companies with the same level of assets. The first company experienced average operating profits of \$100 per quarter over its pre-initiation period, while the second averaged \$10 000 per quarter. It seems almost given that between these two companies, the second would have a higher SD of ROA, and on that

basis would be considered less likely to become a permanent payer. To correct for this problem, we compute a measure of risk-adjusted profitability by dividing each firm's average pre-initiation period ROA by the SD of its ROA. Table 6 shows that the two groups differ significantly in terms of their risk-adjusted pre-initiation period returns. All nine performance measures are significant at the 5% level, while seven of them are significant at the 1% level.<sup>2</sup> When the median values of the two groups are substituted for the means, the differences become slightly more significant. Thus, even though investors do not distinguish between the two groups *a priori*, the temporary payers differ greatly from the permanent payers in their volatility-adjusted performance during the years leading up to initiation.

## VII. A Prediction Model for Payment Length

In Table 3, we documented a statistically similar market reaction to the initiation announcements of temporary and permanent payers. Despite this, there are several characteristics of both the firm and the dividend that are available at the time of initiation that relate to the likelihood of sustained payments. However, we have not yet attempted to predict, out-of-sample, which firms will become permanent payers and which will not. In this section, we create a prediction model that uses information related to the firm itself, the initial dividend, and other firms that had initiated dividends in the past. This model differs from the preceding analysis in that it explores whether dividend sustainability is predictable through time; it tests not only the cross-sectional determinants of sustainability but also whether trends such as the overall decrease in dividend stickiness could have been predicted ahead of time.

We use one of two criteria to predict whether a given company will become a permanent payer. First, if the company has enough quarterly accounting data available to compute its risk-adjusted pre-initiation period operating performance as defined in the previous section of this study, then that risk-adjusted performance is compared with the risk-adjusted performance of the previous 50 dividend initiators. If this risk-adjusted performance is higher than the

<sup>2</sup>In addition to the analysis presented here, we analysed a subset of the sample in which all companies with stock prices of less than \$5 or total assets of less than \$10 million were excluded. Not surprisingly, a disproportionate number of these firms (more than two-thirds) were later defined as Temporary payers. When these firms are removed from the study, some of the size-related variables in Table 2, as well as the 'specified' dummy variable, become insignificant, suggesting that some of the predictability of payment length is concentrated within the very smallest firms. However, the results in Tables 3 and 4, as well as those of the subsequent tables in this study, remain largely unchanged.

average of the past 50 initiators, the company is predicted to become a permanent payer; otherwise, the company is predicted to cease payments within 3 years. Second, if the company does not have enough quarterly data available to compute a risk-adjusted pre-initiation period return, then a logistic regression is estimated on the basis of the other firm- and dividend-specific variables and then used to predict whether that company will become a permanent payer. In this manner, the primary model that we use remains simple while the rolling logistic model is reserved for cases where the quarterly data are scarce but other useful information is available.

For these logistic regressions, we begin by sorting the data set by the date of the first dividend payment and then using the first 50 firms as a benchmark for analysing future dividend initiations. We then estimate a logistic regression across these 50 firms using the following independent variables: firm size, defined as the natural logarithm of total assets in the year immediately preceding initiation; the annualized dividend yield; a distribution code dummy, entitled 'regular', which takes a value of 1 if the distribution code does not specify the dividend to be 'extra', 'special' or 'one-time' and a value of 0 otherwise; the average ROA in the pre-initiation period, using annual data from Compustat; and the market-to-book and debt ratios for the year immediately preceding initiation.

We then use the coefficients from this regression for both explanatory and predictive purposes. In order to make our predictions of which firms will become permanent payers truly out of sample, we first look 8 years beyond the initiation date of the 50th company. This ensures that each of the first 50 firms in the sample will have been established as either a temporary or permanent payer by that time. We then take the coefficients from the original logistic regression and apply them to the first company to initiate dividends eight or more years after the 50th firm had initiated (this is the 306th firm in our entire sample to initiate payments). The model then moves forward through time in the following manner. Another logistic regression is estimated for the second company to initiate dividends after the 8 year period has passed (the 307th initiator from the larger sample), but this regression replaces the 1st company in the estimation sample with the 51st company. The new regression coefficients are then applied to make a second prediction. The model continues to evolve in this manner, with the oldest remaining firm in the estimation sample being replaced at each step with the first company to initiate afterwards, thereby keeping a total of 50 firms in each regression. Each company in the prediction

sample is forecasted to become a permanent payer if the predicted probability of permanence is greater than 50%.

We made predictions for a total of 243 companies that initiated dividends after July 1981. Of these 243 companies, 172 had sufficient accounting data available to make the prediction on the basis of risk-adjusted pre-initiation period performance alone. Predictions for the other 71 were made using the logistic regression coefficients of previous initiators.

Using this model, we were able to correctly predict 150 of the 243 out-of-sample firms. This result is significant at the 1% level ( $t$ -statistic = 3.66) if one assumes the null model forecasts each firm with a 50% probability of success. Given the dramatic decrease in the stickiness of dividends during the late 1970s, one could assume a less than 50% probability of success for the null, given that it might predict more permanent payers than temporary payers on the basis of older data. In any event, this bias would likely strengthen our model rather than weaken it.

Although the coefficients of our logistic model change with each firm in the sample (and are computed only for those firms that have no risk-adjusted performance calculation), it is important to determine, overall, which of these variables are the most useful in prediction. Table 7 shows the results of a logistic regression estimated over all 243 companies in our prediction sample. Using different combinations of these variables, it appears that firm size, risk-adjusted pre-initiation period performance, dividend yield, and the specification of payments as 'regular' (i.e. not 'extra', 'special' or 'one-time') are most important in determining whether an initiating firm will continue to make payments for more than 7 years. This does not come as much of a surprise, given that these variables were among the most significant when tested individually. When risk-adjusted performance is omitted from the regression, the SD of performance becomes marginally significant, with the more volatile firms being more likely to cease payments within 3 years of initiation.

## **VIII. Predicting Future Operating Performance**

Our final area of inquiry is the model's ability to predict, again out-of-sample, which firms will perform best after the dividend initiation. First we examine the model by comparing the firms that we had predicted to become permanent payers to those we had predicted to become temporary payers.

**Table 7. Logistic regressions of portfolio (temporary versus permanent) on pre-initiation data and dividend characteristics**

Variable	Coefficient <i>p</i> -value	Coefficient <i>p</i> -value	Coefficient <i>p</i> -value	Coefficient <i>p</i> -value
Intercept	-3.4302 0.0039	-2.9365 0.0261	-1.7505 0.1043	-1.0998 0.3594
Log assets (-1)	0.3348 0.0272	0.3305 0.0306	0.4784 0.0121	0.4747 0.0127
ROA/SDROA	0.0437 0.0737		0.0574 0.0621	
Mean ROA		2.5277 0.3029		-0.2165 0.9672
SDROA		-24.511 0.1209		-30.7249 0.1203
MTBA (-1)	-0.1913 0.3835	-0.1164 0.6230	-0.1668 0.5354	-0.0029 0.9912
Debt ratio (-1)	-1.3014 0.1998	-1.1959 0.2425	-1.6095 0.1876	-1.3836 0.2381
Regular	2.1593 0.0031	2.1076 0.0035		
Specified			0.0801 0.8665	0.0820 0.8623
Dividend yield	-36.698 0.0633	-34.9121 0.0636	-49.9316 0.0778	-44.2488 0.0889

*Note:* Regression coefficients correspond to the probability that a dividend-initiating firm will become a permanent payer.

The results are given in Table 8. Panel A shows that for most measures of operating performance, the firms that we had predicted to become permanent payers do significantly better in the years following initiation than the companies we had predicted to become temporary payers; for example, the firms that we predicted to become permanent payers experienced an average annual ROA of 15.42% in the 5 years subsequent to initiation, while the firms that we predicted to become temporary payers experienced an average annual ROA of less than 7%. Panel B shows comparisons of the medians rather than the means, and for all nine performance measures, the predicted permanent payers do significantly better than the predicted temporary payers.<sup>3</sup> This suggests that not only is there a relationship between payment length and variables such as pre-initiation period

performance, dividend yield and the stated frequency of payments, but that this relationship extends to future performance as well.<sup>4</sup>

## IX. Conclusions

We interpret the above results as evidence that the market's reaction to the likelihood of dividend sustainability is inconsistent with the signalling theory. Although dividend sustainability is positively related to the future operating performance of the firm, investors do not differentiate *ex-ante* between permanent and temporary payers, even though such a differentiation can be made on the basis of past performance, earnings volatility, firm size and

<sup>3</sup> In an alternative analysis, we address the skewness of some of the performance measures shown in Table 6 by Winsorizing them at the 1st and 99th percentiles. The results for the performance measures that are standardized by sales all become stronger, with Net Income divided by Sales attaining significance at the 1% level and Return on Sales attaining significance at the 10% level.

<sup>4</sup> Additionally, we exclude from the sub-sample of 313 temporary payers nine companies that were delisted from CRSP within a year and a half of their final recorded dividend payments. These firms experienced abnormally poor post-initiation period performance, and in some cases this poor performance was the stated reason for the delisting. The results in Table 6 weaken considerably when such companies are removed from the sample; although the median post-initiation period performance of the predicted permanent payers is significantly higher than that of the predicted temporary payers for most measures, the means are not significantly different at the 10% level for six of the nine measures. However, the results in Tables 2 through 5 remain unchanged, suggesting that these cases of severe post-initiation performance failure do not drive the predictability of payment length at the time of the initiation announcement.



**Table 8. Comparing the long-run post-initiation performance of predicted permanent payers to that of predicted temporary payers**

Variable	Permanent		Temporary		Perm-Temp	p-value
	N	Mean	N	Mean		
<i>Panel A: Means</i>						
ROA	94	15.42%	122	8.70%	6.73%	0.0000
ROE	94	52.00%	120	21.57%	30.43%	0.1155
ROS	94	-81.38%	122	-3.88%	-77.5%	0.4226
CFA	92	9.64%	122	4.05%	5.59%	0.0001
CFE	92	32.69%	120	4.71%	27.98%	0.0626
CFS	92	-171.5%	122	-10.07%	-161.5%	0.3723
NIA	94	5.89%	122	-0.90%	6.79%	0.0008
NIE	94	7.92%	120	-14.20%	22.12%	0.0190
NIS	94	410.9%	122	-10.85%	421.7%	0.3016
<i>Panel B: Medians<sup>a</sup></i>						
ROA	94	15.68%	122	9.45%	6.23%	0.0001
ROE	94	32.45%	120	22.26%	10.20%	0.0013
ROS	94	10.77%	122	7.76%	3.01%	0.0139
CFA	92	9.73%	122	5.88%	3.85%	0.0003
CFE	92	18.23%	120	13.80%	4.44%	0.0010
CFS	92	6.64%	122	4.31%	2.33%	0.0165
NIA	94	6.19%	122	2.18%	4.01%	0.0002
NIE	94	12.22%	120	6.54%	5.68%	0.0003
NIS	94	4.13%	122	1.97%	2.17%	0.0010

*Notes:* These performance measures are computed as the average over the 5 years immediately following dividend initiation.

<sup>a</sup>The *t*-approximation to the Wilcoxon rank-sum test is then used to compare the average rank of the permanent companies to the average rank of the temporary companies.

information specific to the initial dividend itself. Moreover, our out-of-sample prediction model also successfully forecasts operating performance; the firms we predict to become permanent payers using data available to the market at the time of the initiation announcement significantly outperform the firms we predict to become temporary payers. This can be viewed as further evidence against the traditional signalling theory in one of two ways; either dividends convey little if any new information to investors about future profitability, or the market is inefficient in its interpretation of managers' signals. With regard to the latter possibility, it may be a fruitful avenue for future research to explore long-term stock price performance in addition to the measures of operating performance examined here. In either case, however, we find no evidence that the positive market reaction to dividends can be attributed to the signal of a long-term commitment by the firms that initiate them.

## References

- Asquith, P. and Mullins, D. (1983) The impact of initiating dividends on shareholders' wealth, *Journal of Finance*, **56**, 77–96.
- Benartzi, S., Michaely, R. and Thaler, R. (1997) Do changes in dividends signal the future or the past?, *Journal of Finance*, **52**, 1007–34.
- Bhattacharya, S. (1979) Imperfect information, dividend policy, and 'the bird in the hand fallacy', *Bell Journal of Economics*, **10**, 259–70.
- Brav, A., Graham, J., Harvey, C. and Michaely, R. (2005) Payout policy in the 21st century, *Journal of Financial Economics*, **77**, 483–527.
- Brickley, J. (1983) Shareholder wealth, information signaling, and the specially designated dividend: an empirical study, *Journal of Financial Economics*, **12**, 187–210.
- DeAngelo, H. and DeAngelo, L. (1990) Dividend policy and financial distress: an empirical investigation of troubled NYSE firms, *Journal of Finance*, **45**, 1415–31.
- DeAngelo, H., DeAngelo, L. and Skinner, D. (1996) Reversal of fortune: dividend policy and the disappearance of sustained earnings growth, *Journal of Financial Economics*, **40**, 341–71.
- DeAngelo, H., DeAngelo, L. and Skinner, D. (2004) Are dividends disappearing? Dividend concentration and the consolidation of earnings, *Journal of Financial Economics*, **40**, 425–56.
- Fama, E. and French, K. (2001) Disappearing dividends: changing firm characteristics or lower propensity to pay?, *Journal of Financial Economics*, **60**, 3–44.
- Grullon, G. and Michaely, R. (2002) Dividends, share repurchases and the substitution hypothesis, *Journal of Finance*, **57**, 1649–84.

- Grullon, G., Michaely, R., Benartzi, S. and Thaler, R. (2005) Dividend changes do not signal changes in future profitability, *Journal of Business*, **78**, 1659–82.
- Grullon, G., Michaely, R. and Swaminathan, B. (2002) Are dividend changes a sign of firm maturity?, *Journal of Business*, **75**, 387–424.
- Healy, P. and Palepu, K. (1988) Earnings information conveyed by dividend initiations and omissions, *Journal of Financial Economics*, **21**, 149–76.
- Julio, B. and Ikenberry, D. (2004) Reappearing dividends, *Journal of Applied Corporate Finance*, **16**, 89–100.
- Lintner, J. (1956) Distribution of incomes of corporations among dividends, retained earnings, and taxes, *American Economic Review*, **46**, 97–113.
- Michaely, R., Thaler, R. and Womack, K. (1995) Price reactions to dividend initiations and omissions: over-reaction or drift?, *Journal of Finance*, **50**, 573–608.