VOLUME 26 | NUMBER 4 | FALL 2014

Journal of APPLIED CORPORATE FINANCE

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UNIVERSITY of ROCHESTER | SIMON BUSINESS SCHOOL

Are Certain Dividend Increases Predictable? The Effect of Repeated Dividend Increases on Market Returns

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Investors, corporate executives, and financial scholars are all aware that changes in a firm's dividend may have a noticeable effect on the firm's share price. Share prices react more or less strongly to announcements of dividend initiations, increases, decreases, and elimination. The research focus, though, has almost always been the price impact measured over a two or three day period right around the dividend-related announcement.[1]

We believe, however, that markets view changes in dividends in the context of much longer periods of time. It makes sense to us that prior dividend-related announcements would have been factored into market prices and that the latest news needs to be assessed in this connection. By studying the market reaction to a dividend increase for companies with a pattern of consistent dividend increases, we can determine if the market eventually learns to anticipate a dividend increase or if this additional information is irrelevant.

To compare the market impact of different dividend announcements, we rely on a commonly used standardized measure of share price changes called "abnormal returns" that accounts for the many differences in proportions between financial variables. Existing studies find a significant relation between abnormal returns and various corporate financial characteristics, such as dividend yield, firm size,[2] the size of the dividend change,[3] market-to-book value,[4] investor's dividend preferences,[5] return on assets and systematic risk,[6] and the level of institutional ownership.[7]

We investigate patterns of consecutive annual dividend increases to determine if abnormal returns are different depending on the frequency of prior dividend increases. This would suggest how quickly markets learn to anticipate an event based on the number of times the event has already occurred.

Harvard Business School Professor John Lintner conducted surveys in 1956 that showed that the most important factor senior corporate decision-makers used in setting dividend levels was the dividend level in recent quarters.[8,9] Lintner also found that executives were strongly averse to cutting dividends. Lintner integrated these two key findings into a model that explains the "stickiness" of dividends.[10] Companies would be expected, over time, to develop a track record of consistent dividend changes, and the reaction to changes to dividends would be directly proportional to prior stability.[11]

In light of the evidence that dividend increases are associated with positive abnormal returns, and given the knowledge that companies follow a highly predictable pattern of dividend increases, a natural question arises: Do abnormal returns around dividend increase announcements differ depending on the firm's dividend history?

We studied a large number of stocks with very long chains of regularly repeated dividend increases. There are over four hundred firms that announced their twentieth, or higher, consecutive increase between the years 1999 to 2009. It is reasonable to assume that by the twentieth increase, the market would learn to anticipate future dividend increases and extrapolate dividend-increase trends into the future. But how many increases does it take for the market to assume—and price in-some pattern of dividend increases? And what are the implications for managers?

We examine short-term returns around the announcement of each increase, given the sequence of past increases. If the market has already assumed a dividend increase, then observed abnormal returns will be lower upon announce-

1. See Aharony, J. and I. Swary. (1980) "Quarterly dividend and earnings announcements and stockholders' returns: An empirical analysis," *Journal of Finance* 35, 1-12.
2. Amihud, Y. and K. Li. (2006) "The declining information content of dividend announcements and the effects of institutional holdings," *Journal of Financial and Quantitative Analysis* 41, 637-660.
3. Yoon, P. and L. Starks. (1995) "Signaling, investment opportunities, and dividend announcements," *Review of Financial Studies* 8, 995-1018.
4. Lang, L. and R. Litzenberger. (1989) "Dividend Announcements: Cash flow signaling vs. Free cash flow hypothesis?" Journal of Financial Economics 24, 181-191.
5. Li, W. and E. Lie. (2006) "Dividend changes and catering incentives," *Journal of Financial Economics* 80, 293-308.
6. Grullon, G., R. Michaely, and B. Swaminathan. (2002) "Are dividend changes a sign of firm maturity?" *Journal of Business* 75, 387-424.
7. Amihud, Y. and K. Li. (2006) "The declining information content of dividend announcements and the effects of institutional holdings," *Journal of Financial and Quantitative Analysis* 41, 637-660.
8. Lintner, J. (1956) "Distribution of incomes of corporations among dividends, retained earnings, and taxes," *American Economic Review* 46, 97-113.
9. More recent research has shown essentially the same thing. See Brav, A., J. Graham, C. Harvey, and R. Michaely, (2005) "Payout policy in the 21st century," *Journal of Financial Economics* 77, 483-527.
10. Using a larger sample of firms, researchers found evidence that dividend policies were still consistent with Lintner's model. See Fama, E. and H. Babiak, (1968) "Dividend policy: an empirical analysis," *Journal of the American Statistical Association* 63, 1132-1161.
11. Dielman, T. and H. Oppenheimer (1984) "An examination of investor behavior during periods of large dividend changes," *Journal of Financial and Quantitative Analysis* 19, 197-216.

Table 1 **Distribution of Chain Length by year of announcement, by chain length**

This table reports the distribution of dividend increases classified by announcement year and Chain Length, which is the number of years of consecutive once-a-year increases, for a sample of dividend increases occurring between 1999 and 2009. Inclusion in the sample requires that year *t+1* contains one dividend increase only and the intervening dividends between the increase in year *t* and before the increase in year *t+1* are all equal.

	Announcement Year												Survival Rate
Chain Length	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**TOTAL**	
1	184	178	169	219	233	292	278	243	208	130	80	2214	-
2	116	80	74	80	100	116	160	145	124	74	34	1103	46.3%
3	69	61	48	43	45	56	79	119	106	53	27	706	59.6%
4	59	45	38	33	30	31	40	53	83	61	23	496	64.4%
5	34	41	33	31	20	24	23	29	40	49	39	363	69.6%
6	34	29	31	22	27	16	17	15	25	30	22	268	72.2%
7	30	27	22	27	19	23	10	11	15	18	18	220	77.2%
8	21	23	22	15	17	15	22	9	9	11	10	174	75.7%
9	11	17	15	20	12	19	13	20	8	5	3	143	80.5%
10	6	9	14	14	18	10	15	12	18	6	2	124	84.3%
11	4	4	5	13	13	15	8	13	9	15	2	101	79.5%
12	18	4	5	4	9	8	12	6	13	6	8	93	75.8%
13	17	14	5	4	4	8	7	11	4	10	4	88	83.5%
14	12	14	9	2	2	3	7	7	9	3	9	77	77.4%
15	7	11	8	11	2	2	3	7	7	6	2	66	86.8%
16	8	5	10	6	9	2	2	1	8	5	4	60	81.3%
17	4	8	5	8	6	8	2	2	2	3	2	50	82.1%
18	4	4	8	5	8	4	5	2	2	1	2	45	85.4%
19	4	5	3	5	5	9	5	4	2	2	0	44	93.0%
20+	31	31	37	33	35	38	41	44	46	37	32	405	-
TOTAL	673	610	561	595	614	699	749	753	738	525	323	6840	
Survival Rate	**-**	**62.9%**	**61.8%**	**65.8%**	**62.1%**	**64.3%**	**66.0%**	**66.3%**	**68.7%**	**51.9%**	**43.4%**		

Table I contains the distribution of the number of dividend increases across announcement years, partitioned by length of prior annual dividend increases. Each of the years from 1999 to 2008 contains more than 500 increases, with the year 2009 containing 323 increases. The substantially smaller number of increases in 2009 compared to prior years is consistent with a substantial reduction in the number of dividend-increasing firms across all listed firms caused by the onset of the "financial crisis." Approximately one-third (2214 ÷ 6840) of the sample of dividend increases represents the first dividend increase, with the fraction of observations in each chain length category maintaining a monotonic decrease until the twentieth increase. We identify over 400 firms with a track record of twenty or more years of consecutive dividend increases, indicating a strong commitment to building a predictable dividend track record. Although these figures describe the distribution of the sample by year and chain length, we also present statistics on the proportion of firms that progress to the next chain length category, called the survival rate. For a particular cell, reading along each right diagonal, the figure in the cell to the lower right is the number of firms that survive and increase the dividend in the following year, thereby extending the dividend chain length by one. For example, 43 dividend increases announced in the year 2002 represent the third consecutive dividend increase. Of these 43 firm-chains, 30 survive by announcing a dividend increase in the following year (i.e., 2003), increasing the chain length to 4, while 24 of these 30 firms announce a further successive increase in 2004. The final column in Table I reports the survival rate by chain length. Only 46% of firms that announce a dividend increase survive to announce a second increase. With the exception of a slight dip in the survival rate at the eighth dividend increase, the survival rate monotonically increases until the tenth increase, where 84% of the firms that announce a ninth increase go on to announce a tenth increase. The pattern shows that the dividend policy of many firms delivers steady dividends to stockholders with regular increases over time. Therefore, the popular claim made by financial executives, that they endeavor to maintain consistency with the historic dividend level is consistent with what is observed in practice and may be extended to include a constant dividend growth as well.

The last row of Table 1 reports that the survival rate is stable each year from 2000 to 2007 and varies little from the average rate across this period of 64%. However, the rate decreases markedly in 2008 and then decreases again to 43% in 2009, consistent with the onset of the 2008 financial crisis.

ment. The number of preceding dividend increases may also affect market expectations as well.

We find that the abnormal returns around the first and second dividend increase announcements are significant and positive, but are much less significant for the third and further increases. We also discover that the size of the dividend change tends to decrease as more increases have occurred. That is also to say that larger percentage dividend changes tend to occur earlier in the sequence. Even after controlling for the number of prior dividend-increases and firm-specific variables, the first two dividend increases are strongly significant and subsequent increases are not significant. This suggests that the market has learned to anticipate future increases by the time a firm increases its dividend for two consecutive years. Managers should understand that increased dividend levels are likely to produce large positive abnormal returns only in the first two years, and that subsequent dividend increases are already factored into the share price.

Table 2 **Summary statistics for initial sample, by chain length**

The table reports the mean and median values for five firm-specific variables for a sample of 6,840 dividend increases with a declaration date between January 1, 1999 and December 31, 2009, partitioned by Chain Length, which is the number of years of consecutive once-a-year dividend increases. Chain Lengths of twenty or more are combined in a single category labeled '20+.' Dividend change is the change in the dividend relative to the previous quarterly dividend. Earnings change is the difference in quarterly earnings per share for the two most recent quarters prior to the dividend increase, scaled by the stock price at the end of the prior quarter. Market Cap is the market value of equity (in $ millions) and is the product of the stock price and the number of shares calculated at the end of the quarter prior to the dividend increase announcement date. The market-to-book ratio is Market Cap divided by the total shareholder's equity. The leverage ratio is the ratio of total liabilities to total capital, where total liabilities is measured as short-term debt plus long-term debt and total capital is total liabilities plus Market Cap. Accounting variable values are for the fiscal quarter end dates that are reported on or before the dividend increase announcement date.

		Dividend Change (%)		Earnings Change (%)		Market Cap ($m)		Market-to-Book		Leverage Ratio	
Chain Length	***n***	**Mean**	**Median**	**Mean**	**Median**	**Mean**	**Median**	**Mean**	**Median**	**Mean**	**Median**
1	2214	24.5	14.3	0.32	0.21	6494	685	2.90	1.89	0.30	0.25
2	1103	17.1	11.1	0.14	0.18	7052	825	3.06	2.01	0.31	0.28
3	706	14.4	11.1	0.11	0.16	8943	1082	2.77	2.04	0.30	0.26
4	496	12.4	10.0	0.09	0.13	8879	1145	2.97	2.11	0.31	0.27
5	363	11.2	9.9	-0.07	0.12	9689	1232	3.87	2.14	0.29	0.25
6	268	10.8	9.1	-0.02	0.09	9301	1148	2.77	2.10	0.30	0.26
7	220	9.7	8.3	0.04	0.12	8898	1278	6.54	2.10	0.30	0.26
8	174	10.9	8.2	-0.01	0.12	11010	1329	3.39	2.16	0.30	0.27
9	143	10.6	8.3	0.11	0.14	14779	1921	4.27	2.40	0.30	0.28
10	124	11.4	8.6	-0.07	0.14	13405	2329	3.26	2.50	0.30	0.27
11	101	11.4	9.1	0.07	0.11	12057	2199	3.34	2.51	0.28	0.23
12	93	9.3	6.1	0.08	0.07	14962	2722	3.42	2.24	0.28	0.25
13	88	8.1	8.1	0.19	0.09	14573	2639	3.36	2.22	0.27	0.24
14	77	7.7	6.8	-0.06	0.11	15584	2395	3.35	2.45	0.29	0.26
15	66	7.1	6.1	0.13	0.12	17270	2750	2.93	2.10	0.29	0.25
16	60	8.5	6.6	0.08	0.15	16694	3029	2.76	2.15	0.27	0.25
17	50	7.3	5.7	0.09	0.16	11916	3250	2.76	2.29	0.29	0.24
18	45	7.8	5.0	0.19	0.08	7386	2883	2.59	2.12	0.30	0.28
19	44	9.5	4.8	0.20	0.23	7047	2807	2.63	2.04	0.28	0.20
20+	405	7.9	5.9	0.06	0.12	25764	4871	3.52	2.39	0.23	0.18
Total	6840	16.4	10.0	0.15	0.16	9567	1233	3.19	2.06	0.30	0.25

The financial information firms Mergent and Standard & Poor's have created a special category for firms that have a long history of consistent annual dividend increases.[12] There are also numerous mutual funds that invest solely in firms that have consistently increased their dividends.[13]

To our knowledge, the only other study of dividend change announcements that considers the prior dividend history is the 2012 paper by Harvard's Malcolm Baker and NYU's Jeffrey Wurgler. They argue that investors view dividends as reference points where each equal-sized quarterly dividend reminds investors of that dividend amount and so any change is a prominent event and may trigger larger returns.

Analysis

We examine all taxable regular quarterly dividends[14] declared during the 48-year period 1962-2009. Although we study the abnormal returns around dividend increases only during the last ten years (1999-2009) of the overall period, we investigate the companies' entire prior dividend history back to 1962 to determine the length of the dividend-increase chain at any one time.[15]

12. Mergent maintains the Dividend Achievers Index, and a number of funds exist with an investment objective to replicate the performance of the index. Mergent designates any firm that has increased its dividend for at least ten or more consecutive years as a Dividend Achiever. Standard and Poor's requires a longer, twenty-five year history of consecutive annual dividend increases for a firm to be classified as a 'Dividend Aristocrat.'

13. The Russell High Dividend Australian Shares ETF (Exchange Traded Fund) is a fund that considers the 'consistency of dividends' as one of many factors to qualify for inclusion in the fund.

14. Using dividend information obtained from the Center for Research in Security Prices (CRSP) database.

15. Detailed procedures on the dividend increase identification are available from the authors on request and include criteria such as having only one increase per year, having the increase in the same quarter each year, etc. Table 1 reports the distribution of dividend chain length across our sample.

Table 3 **Dividend increase amount summary statistics, by chain length**

The table provides characteristics of the dollar amount of the dividend increase classified by Chain Length. Dividend increases are arranged into one of five non-exhaustive size bins (half-a-cent, one cent, two cents, five cents, and greater than five cents). The final column reports the number of dividend increases that are a multiple of one-quarter of a cent.

				Dividend Increase Amount					Multiple
Chain Length	**Total**	**Mean**	**Median**	**$0.005**	**$0.01**	**$0.02**	**$0.05**	**> $0.05**	**of $0.0025**
1	2214	0.023	0.013	215	728	339	87	146	2054
2	1103	0.021	0.011	98	372	177	39	59	1020
3	706	0.020	0.013	64	221	133	24	30	659
4	496	0.019	0.011	54	151	87	22	14	460
5	363	0.020	0.013	43	107	67	6	20	342
6	268	0.018	0.013	39	72	44	9	7	254
7	220	0.017	0.010	25	71	41	6	5	209
8	174	0.018	0.012	17	54	30	2	5	160
9	143	0.020	0.013	14	42	22	2	8	132
10	124	0.020	0.015	15	27	17	3	6	119
11	101	0.020	0.012	13	28	12	3	4	95
12	93	0.017	0.010	10	31	13	0	4	89
13	88	0.016	0.010	14	30	13	1	1	86
14	77	0.015	0.010	8	30	9	1	1	75
15	66	0.015	0.010	11	19	12	1	1	66
16	60	0.017	0.010	6	21	6	2	2	58
17	50	0.015	0.010	5	19	5	3	0	49
18	45	0.016	0.010	8	13	4	0	1	43
19	44	0.020	0.010	6	12	3	1	4	43
20+	405	0.016	0.010	62	104	35	6	8	380
Total	6840	0.020	0.011	727	2152	1069	218	326	6393

The dividend literature suggests that abnormal returns in response to dividend increase announcements are related to a number of firm-specific variables. We consider five of the variables that we view as most relevant and important to our hypothesis:

1. *Dividend Change* is the change in the increased dividend relative to the previous quarter's dividend.

2. *Earnings Change* is the change in the most recent quarterly earnings compared to the prior quarter.

3. *Market Cap* is the product of the stock price and the number of shares outstanding at the end of the quarter before the dividend increase announcement.

4. *Market-to-Book Ratio* is the market value of equity divided by the total shareholder's equity and is a proxy for the firm's future growth opportunities.

5. *Leverage Ratio* is the ratio of total liabilities to total capitalization.

Table 2 reports summary statistics for five firm characteristic variables. The first dividend increase is the largest, and represents a 24.5% increase over the prior quarter's dividend. Looking down the columns, we note a general decline in the mean and median percentage change as the length of the dividend-increase chain increases. Therefore, the argument that larger dividend increases have more information content may, in part, be explained by the observation that the larger increases tend to be concentrated in the first few increases in a chain. Partitioning dividend increases by the prior track record exposes this relationship, and so provides a reason to investigate how the prior dividend track record and the size of the increase are related to abnormal returns. Indeed, our results demonstrate that, even after controlling for size, the first two dividend increases in a chain are significant.

The most obvious pattern emerging from the remaining four variables is that the median market capitalization tends to increase as the chain length increases. This observation indicates that a longer record of consecutive dividend

Table 4 **Frequency distribution of dividend increase amount, by chain length**

The table reports information on the size of the dividend increase compared to the prior year's increase and all prior increases for the second through to the twentieth dividend increase in a chain. Columns 2 through 6 compare the size of the dividend increase to the prior year's increase only. For example, for firms announcing the eighth dividend increase in a chain, 83 of the increases are the same size as the seventh increase. The final column compares each sequentially numbered dividend increase to all preceding dividend increases. For example, for firms announcing the eighth dividend increase, twelve of the increases are the same size as the seventh, sixth, and so on through to the first dividend increase.

	Dividend Increase Amount					
	compared to prior increase only					compared to all prior increases
Chain Length	Smaller	Equal	Larger	≤ -50%	≥ 100%	Equal
2	347	543	306	215	151	543
3	188	373	208	112	97	216
4	146	252	122	80	56	102
5	118	176	93	59	32	51
6	63	160	60	30	23	29
7	72	98	55	41	26	19
8	51	83	54	29	19	12
9	37	69	44	19	15	9
10	36	53	42	16	11	6
11	34	44	32	19	14	3
12	33	49	17	20	4	3
13	25	47	24	17	12	3
14	31	45	15	17	8	1
15	22	38	14	12	3	1
16	12	35	17	8	8	1
17	18	22	13	12	8	1
18	12	27	9	6	7	0
19	10	21	14	5	5	0
20	113	187	120	63	50	0
Total	1368	2322	1259	780	549	

increases is associated with greater firm equity value.

Percentage changes in dividends decline with longer chain lengths. But, as shown in Table 3, the absolute change in the dividend across chain length is quite stable. For our full sample, the median dividend increase was $0.011 per share, and the most common increase was $0.01, accounting for almost one-third of the sample.

The market may learn to anticipate a dividend increase if the increases are of the same absolute amount. For example, if a firm increases its dividend by one cent for ten consecutive years, the market might reasonably expect the firm to continue this increase pattern in the future, particularly as firms try to maintain an unbroken dividend track record.

Table 4 shows that, for each chain length, the proportion of increases that are equal to the prior year's increase is quite stable, at approximately 50%. The remaining increases are split fairly evenly between those that are smaller than the prior increases and those that are larger. Of those increases that are larger than the prior increase, a small proportion is larger by one hundred percent, or more. These figures are consistent with those reported in Table 3 and indicate that the dollar amount of the change is fairly consistent, with the dollar increase from one increase to the next displaying little variation.

The final column in Table 4, which lists the number of times that the amount of the increase is equal to all previous increases, indicates that only a small proportion of sample firms maintain an unbroken record of increasing by the same amount every year. Of those companies announcing their second increase, 543 increased the dividend by the

Table 5 **Descriptive statistics for dividend increases without concurrent announcements, by chain length**

The table contains firm-specific descriptive statistics for five variables partitioned by Chain Length, which is the number of consecutive once-a-year dividend increases, for a sample of 2,900 quarterly dividend increases announced by US firms between January 1, 1999 and December 31, 2009. Chain Lengths of ten or more are combined in a single category labeled '10+.' Dividend change is the change in the dividend relative to the previous quarterly dividend. Earnings change is the difference in quarterly earnings per share for the two most recent quarters prior to the dividend increase, scaled by the stock price at the end of the prior quarter. Market Cap is the market value of equity (in $ millions) and is the product of the stock price and the number of shares calculated at the end of the quarter prior to the dividend increase announcement date. The market-to-book ratio is Market Cap divided by the total shareholder's equity. The leverage ratio is the ratio of total liabilities to total capital, where total liabilities is measured as short-term debt plus long-term debt and total capital is total liabilities plus Market Cap. Accounting variable values are for the fiscal quarter end dates that are reported on or before the dividend increase announcement date.

		Dividend change (%)		Earnings change (%)		Market Cap ($m)		Market-to-book		Leverage ratio	
Chain Length	***n***	**Mean**	**Median**	**Mean**	**Median**	**Mean**	**Median**	**Mean**	**Median**	**Mean**	**Median**
1	888	21.5	13.3	0.30	0.22	3568	461	2.37	1.84	0.31	0.28
2	471	16.0	11.1	0.12	0.17	4063	540	2.47	1.91	0.32	0.31
3	295	13.7	10.2	0.09	0.16	4826	908	2.51	1.94	0.32	0.31
4	227	10.8	9.1	0.13	0.14	6108	891	2.50	1.93	0.33	0.32
5	162	10.2	8.5	0.08	0.13	6146	1031	2.80	2.00	0.32	0.28
6	131	10.2	8.0	-0.11	0.06	7045	942	2.46	1.98	0.32	0.29
7	113	8.8	8.0	0.15	0.14	6708	1061	2.46	1.88	0.32	0.29
8	83	9.1	7.7	-0.01	0.10	6380	977	3.55	2.05	0.29	0.27
9	60	9.2	7.1	0.06	0.10	4097	940	2.48	2.05	0.31	0.30
10+	470	8.3	6.4	0.13	0.11	6606	2391	2.99	2.23	0.26	0.22
Total	2900	14.6	10.0	0.16	0.15	4982	888	2.58	1.96	0.31	0.28

same amount as the first increase. By the third increase, the number drops to 216. At the time of the tenth increase, just six firms have increased the dividend by exactly the same amount for ten consecutive years.[15] Table 5 shows the number of dividend increases is fairly evenly spread out over the sample time period, with the fewest observations, 168, in 2001 and the most, 233, in 2005.[16] Once again, the mean and median market capitalization of dividend-increasing firms increases with the number of consecutive dividend increases. The mean market-to-book ratio increases with the length of the dividend-increase chain, suggesting that companies with longer records of dividend increases have higher future growth opportunities than firms with shorter dividend records. Mean and median leverage ratios both increase as the number of dividend increases lengthens but peaks at the sixth increase and then decreases slightly with each subsequent increase, giving the relationship a humped shape.

Table 5 reports the percentage dividend change declining as the dividend-increase chain lengthens. This is true of both the full sample of dividend increases and the final sample. For the first dividend increase, the mean (median) increase was 21.5% (13.3%); after ten or more consecutive increases the mean (median) dividend change falls to 8.3% (6.4%).

The values for the market-to-book ratio, leverage ratio, and the dividend change for the filtered sample reported in Table 5 are similar to the corresponding figures reported for the unfiltered sample of dividend increases in Table 2. However, comparing the market values across the two samples indicates that the mean and median values for the final sample are smaller. The median firm has a market value of $416 million, which is approximately half the median market value of $785 million for the final sample. This result

16. To properly measure the stock market reaction to a dividend increase we use the CRSP-reported declaration date and then use the Factiva newswire database to ensure that the increase is not pre-announced. A dividend increase is discarded from the initial sample if there is another announcement in the period within three business days on either side of the verified dividend increase announcement date. Application of this filter results in a final sample size of 2,900 dividend increase announcements during 1999-2009. Thus, slightly higher than forty percent of the full sample of dividend increase announcements is free of other, potentially confounding, announcements. A result of the reduced sample size is fewer chains of between ten and twenty years of consecutive dividend increase announcements. Therefore, in the remainder of the paper all Chain Lengths of ten or more years are combined into a single category referred to as '10+.'

17. The number of observations declines with the number of consecutive dividend increases required, except for the grouped category of 10+, as firms do not increase in the year following an increase, causing the chain to terminate.

Table 6 Mean abnormal return, by dividend increase number

This table reports the two-day abnormal return, CAR, (expressed in percent) around the dividend increase announcement date for a sample of 2,900 dividend increase announcements with a declaration date between January 1, 1999 and December 31, 2009, classified by Dividend Increase Number. The dividend increase announcement is the only price-sensitive announcement that occurs in the three trading days on either side of the announcement date. Chains of ten or more consecutive annual dividend increases are combined in a single category labeled '10+.' The column headed 'ΔDPS < median' contains the mean abnormal return for each dividend-increase number for increases that are smaller than the median increase for that particular dividend-increase number category. A similar explanation applies to the column headed 'ΔDPS ≥ Median.' We use the equality in the latter size category because, when we use the median change as a break-point, there is not always the same number of observations in each of the two categories when multiple increases are of an amount that is also equal to the median increase amount. For example, in the second dividend-increase category there are 231 increases that are smaller than the median and 240 that are greater than the median, and for the overall sample the corresponding numbers are 1,437 and 1,463. *, **, and *** denote statistical significance at the 10%, 5% and 1% levels, respectively.

		Overall		ΔDPS < Median		ΔDPS ≥ Median	
Dividend Increase #	***n***	**CAR**	**Z-stat**	**CAR**	**Z-stat**	**CAR**	**Z-stat**
1	888	0.370	3.09***	0.252	2.13**	0.488	3.43***
2	471	0.316	2.77***	0.252	1.41	0.378	2.50**
3	295	-0.174	-0.99	-0.330	-2.00**	-0.020	0.59
4	227	-0.028	-0.47	0.224	0.32	-0.269	-0.97
5	162	0.156	0.65	0.008	0.01	0.305	0.90
6	131	0.193	1.16	0.542	2.15**	-0.151	-0.50
7	113	0.031	-0.07	-0.090	-0.35	0.151	0.25
8	83	0.533	1.74*	0.887	1.79*	0.187	0.68
9	60	0.052	0.71	0.367	1.28	-0.224	-0.22
10+	470	0.089	0.72	0.009	-0.05	0.169	1.07
TOTAL	2900	0.194	3.92***	0.157	2.05**	0.231	3.48***

Table 7 Mean abnormal return, by increase amount and dividend increase number

The table reports the mean abnormal return around the dividend increase announcement date partitioned by the dividend increase number and the magnitude of the increase compared to the prior increase amount. The dividend increase number ranges from two to ten. The table starts at the second dividend increase because the first dividend increase, by definition, is not preceded by an increase. *, **, and *** denote statistical significance at the 10%, 5% and 1% levels, respectively.

	Dividend Increase amount compared to prior increase								
	Smaller			Equal			Larger		
Dividend Increase #	***n***	**CAR**	**Z-stat**	***n***	**CAR**	**Z-stat**	***n***	**CAR**	**Z-stat**
2	135	-0.122	-0.10	232	0.452	2.72***	104	0.582	1.95*
3	81	-0.323	-1.56	138	-0.244	-0.73	76	0.111	0.24
4	68	-0.119	-0.45	118	0.185	0.42	41	-0.490	-1.22
5	45	0.311	1.13	78	0.209	0.45	39	-0.129	-0.54
6	29	-0.792	-1.18	76	0.594	2.34**	26	0.119	-0.14
7	33	0.322	0.22	56	-0.124	-0.55	24	-0.006	0.44
8	24	0.325	0.70	40	0.876	1.73*	19	0.072	0.33
9	16	0.166	0.04	27	0.380	1.38	17	-0.578	-0.44
10	125	0.327	1.37	230	0.118	0.90	115	-0.226	-1.25
Total	556	0.004	0.10	995	0.221	2.84***	461	0.027	0.09

Table 8 **Single and multivariate analysis of market reaction to repeated dividend increase announcements**

The table reports the results of estimating five different specifications of the equation $CAR = \beta_0 + \beta_1 \Delta DPS + \beta_2 \Delta EPS + \beta_3 MVE + \beta_4 MBR + \beta_5 LVR + \sum \gamma_i DINUMi$ for a sample of 1,535 dividend increases announced between January 1, 1999 and December 31, 2006. CARs the two-day cumulative risk-adjusted abnormal return, CAR[0, +1]. ΔDPS is the size of the dividend increase compared to the previous quarter's dividend; ΔEPS is the change in earnings per share for the most recent quarter prior to the dividend increase announcement, scaled by the stock price; MVE is the natural logarithm of the market value of equity (in $ millions), where the market value of equity (MVE) is calculated as the product of the stock price and the number of shares outstanding one trading day before the dividend increase announcement date; the leverage ratio (LVR) is calculated as total current liabilities plus total non-current liabilities divided by the sum of total current liabilities, total non-current liabilities and MVE; The market-to-book ratio (MBR) is calculated as MVE divided by total shareholders' equity; and DINUMi is a dummy variable that equals one if the dividend increase represents the i^{th} consecutive annual increase, where i ranges from 1 to 10+ (i.e., ten or more) and $DINUM_3$ is the omitted dummy variable. The row headed 'R-squared' reports the adjusted R-squared. Two-tailed t-statistics are in parentheses. *, **, and *** denote statistical significance at the 10%, 5% and 1% levels, respectively.

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Constant	0.106	0.192	1.976	0.229	0.210	1.686
	(1.72)*	(3.81)***	(3.78)***	(3.42)***	(2.48)**	(2.70)***
ΔDPS	0.604					0.494
	(2.41)**					(1.89)*
ΔEPS		1.673				0.279
		(0.45)				(0.07)
MVE			-0.087			-0.089
			(-3.42)***			(-3.13)***
MBR				-0.013		-0.002
				(-0.78)		(-0.13)
LVR					-0.051	-0.257
					(-0.23)	(-1.06)
$DINUM_1$						0.454
						(2.49)**
$DINUM_2$						0.444
						(2.23)**
$DINUM_4$						0.161
						(0.68)
$DINUM_5$						0.361
						(1.38)
$DINUM_6$						0.391
						(1.38)
$DINUM_7$						0.254
						(0.86)
$DINUM_8$						0.743
						(2.22)**
$DINUM_9$						0.239
						(0.63)
$DINUM_{10+}$						0.364
						(1.80)*
R-squared	0.002	<0.001	0.004	<0.001	<0.001	0.005
F-statistic	5.76	0.65	11.69	0.61	0.82	2.05**

indicates that the filter excludes a greater proportion of larger market-value firms. Since larger firms tend to disclose more public information than smaller firms, the larger firms will have a greater likelihood of making other types of corporate announcements in the vicinity of the dividend increase and therefore not qualify for inclusion in the final sample.[18]

Results

The announcement to the first dividend increase was associated with a significantly positive abnormal return of 0.37%, suggesting that these announcements are not anticipated (Table 6 shows mean abnormal returns for the two-day dividend increase announcement period partitioned by Dividend Increase Number).

At the announcement of the second increase, the abnormal return declines to 0.32%. With the exception of the eighth dividend increase being marginally significant, the third and all subsequent dividend increase amounts display abnormal returns that are not statistically different from zero. These results suggest that the first and second consecutive dividend increases are unexpected, and that by the time the third, or later, consecutive dividends are announced, the increases are largely expected. This association of declining abnormal returns with more frequent announcement is consistent with the findings of other scholars.[19]

To further explore the relationship between the number of increases and the size of the increase, we separate the observations in each dividend-increase number category into two groups—one with increases above the median increase for that particular dividend-increase number and the other group with below-median increases. As reported in Table 6,

18. Standard event study methodology is used to measure abnormal returns around each dividend increase announcement using a two-day window [0, +1] to measure abnormal returns. The market model regression is estimated using a maximum estimation length of 255 trading days and a minimum estimation length of 30 trading days computed from data over the interval [-264, -10] relative to the dividend increase announcement date. We determine the statistical significance of the abnormal returns by following the method described in J. Patell, (1976) "Corporate forecasts of earnings per share and stock price behavior: Empirical tests," *Journal of Accounting Research* 14, 246-276.

19. See E. Pilotte, and T. Manuel, (1996) "The market's response to recurring events: The case of stock splits," *Journal of Financial Economics* 41, 111-127 and A. Iqbal, (2008) "The importance of the sequence in UK rights issues," *Journal of Business, Finance & Accounting* 35, 150-176.

although both show significantly positive returns overall, the larger increases were associated with higher abnormal returns (of 0.23%, as compared to 0.16% for the smaller increases). The largest (and most statistically significant) returns are the first and second consecutive increases. Smaller-sized increases are significantly positive for first-time dividend increases but become insignificant by the second increase.

Next, we split each dividend-increase number into one of three categories depending on whether the increase is smaller, equal to, or larger than the previous increase (see Table 7). When the second increase is larger than the first increase, abnormal returns are a significant 0.58%.

When the second increase is just the same as the first increase, abnormal returns are only 0.45%. Nearly all remaining returns are statistically insignificant.

As mentioned previously, some other scholars have found links between abnormal returns and dividend increases depending on the market-to-book ratio,[20] so we performed a regression controlling for market-to-book ratios and other common financial variables.

$$CAR = \beta_0 + \beta_1 \Delta DPS + \beta_2 \Delta EPS + \beta_3 MVE + \beta_4 MBR + \beta_5 LVR + \sum_{i=1, i\neq 5}^{10+} \gamma_i DINUM_i$$

where CAR is the 2-day announcement period abnormal return, ΔDPS is the size of the dividend increase, ΔEPS is the change in earnings per share, MVE is the natural logarithm of the market value of the firm's equity, MBR is the firm's market-to-book ratio, and LVR is the firm's market-leverage ratio. $DINUM_i$ is a dummy variable with a value of one if the dividend increase is the i^{th} consecutive increase in a dividend-increase chain, and zero otherwise.[21]

We found that the size of the dividend increase (ΔDPS) is positively related to the announcement-period abnormal returns (see Table 8).

The significant negative coefficient on the market value of equity (MVE) suggests that the information contained in a dividend increase announcement is more important for small firms than for large firms. This difference may simply reflect the reality that large market-value firms provide more frequent information releases and have greater analyst coverage. The coefficients on the other three variables—earnings-per-share change (ΔEPS), market-to-book ratio (MBR), and the leverage ratio (LVR)—are not statistically significant. These results are consistent with our previous findings about dividend increases. We also conducted several robustness tests[22] that validate these findings.

Finally, we ran the same regressions using a five day before-and-after window rather than just a two-day window to see if we had overlooked some market reaction. The wider window hardly changed our findings.

The robustness checks further support our findings that positive abnormal returns are confined to the early dividend increases. This is consistent with the hypothesis that, by the second dividend increase, the market price reflects expected future increases, and so their announcements cause little market reaction. Market reaction is dampened, not because subsequent increases tend to be smaller in percentage terms, but simply because the market becomes accustomed to the increases.

Conclusions

It is clear that the conventional method of analyzing dividend increases without consideration of past increases does not tell us much. Our results indicate that the market reaction to dividend increases is positive and significant for the first and second dividend increase, but then becomes insignificant for subsequent increases. This is intuitively plausible in that market participants should be able to anticipate dividend increases by firms that have a long history of them. However, it is somewhat surprising that it should happen so quickly.

Some managers may wish to avoid establishing a pattern that can be anticipated, and so properly valued, by investors. One way to do this is to have special dividends that are not repeatable or to use other methods of returning money to shareholders such as share repurchases.

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20. See Yoon and Starks (1995) and Lang and Litzenberger (1989).

21. The dummy variable that represents three consecutive dividend increases is excluded from Equation (1) in order to prevent multicollinearity among the dummy variables that would otherwise occur.

22. For example, excluding instances when the stock did not trade on the dividend increase announcement date, excluding from the sample dividend increase announcements that occur within 365 days of the termination of a dividend-increase chain, using year fixed effects to control for any time trend that might exist in abnormal returns.

Journal of Applied Corporate Finance (ISSN 1078-1196 [print], ISSN 1745-6622 [online]) is published quarterly, on behalf of Cantillon and Mann, by Wiley Subscription Services, Inc., a Wiley Company, 111 River St., Hoboken, NJ 07030-5774. Postmaster: Send all address changes to JOURNAL OF APPLIED CORPORATE FINANCE Journal Customer Services, John Wiley & Sons Inc., 350 Main St., Malden, MA 02148-5020.

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