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Valuation Effects of Greek Stock Dividend Distributions

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Abstract

This study analyses the price reaction to stock dividend distributions by firms listed on the Athens Stock Exchange on both the announcement and the ex-dividend day. It also analyses earnings per share, dividends per share and trading volume in the pre- and post-announcement periods. The findings show statistically insignificant abnormal returns on both the announcement and the ex-dividend day. The analysis does not reveal any significant change in earnings per share and dividends per share, but it does reveal a significant decline in the market-adjusted trading volume in the post dividend period. The findings, based on a different institutional environment, expand the empirical evidence on the value effects of stock dividends.

Keywords: *Stock dividends*.

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1. Introduction

According to theory, stock dividend distributions—which merely rearrange the net worth accounts of the firm—should not cause any equity value effects. Contrary to this theoretical prediction, however, empirical studies of stock dividends in the USA

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have documented a statistically significant market price reaction on the stock dividend announcement day, as well as, on the ex-dividend day.[1] These findings raise two questions. First, if stock dividends have no value effects, as theory suggests, why do firms incur costs to distribute stock dividends? Second, what causes the market to react positively to stock dividend distributions?

Several hypotheses have been advanced to answer these questions. The signalling hypothesis (Grinblatt, Masulis and Titman, 1984; McNichols and Dravid, 1990) suggests that firms with low future profitability avoid stock dividends because they reduce retained earnings and, consequently, their capacity to maintain their regular cash dividends in the future. Accordingly, only firms with improving future profitability can afford to distribute stock dividends; this, then, provides a positive signal to investors. Another hypothesis suggests that stock dividends are used to bring price per share back to a normal range (McNichols and Dravid, 1990). Finally, Lakonishok and Lev (1987) argue that stock dividends have value because investors perceive them to be substitutes for cash dividends.

Whereas these hypotheses have been developed to explain market value effects under the institutional arrangements of developed capital markets, and especially those of the USA, the market and institutional environment of other markets may not justify these hypotheses. The distribution of stock dividends in Greece, in particular, presents certain interesting differences in comparison to similar distributions in other capital markets like those in the USA and the UK. First, stock dividends, in Greece, are not always initiated by the firms. Instead, they usually result from the enactment of legislative decrees which require the firms to declare stock dividends. This implies that new information release by means of stock dividends is in most cases absent, depriving them of any signalling content. Such an institutional environment allows us to test more directly for other hypothesized effects (associated, for example, with improved marketability or investor attention), which is not possible in a market environment where stock dividends are associated with signalling effects, as well. Second, unlike the case in the USA, but similar to the case in the UK, certain types of stock dividends in Greece are taxable. In the period covered by this study all identified stock dividends were initiated by legislation decrees and were tax free. This type of sample which is free of signalling and tax effects offers the opportunity to conduct tests which provide additional evidence regarding the market's price reaction to stock dividends around both the announcement day and the ex-dividend day. Such evidence can help ascertain whether the empirical findings documented in the literature represent a more general phenomenon.

The goal of this study is twofold: (a) to investigate the stock market reaction to announcements of stock dividends in Greece, both on the announcement day, as well as on the ex-dividend day, and (b) to compare earnings per share, dividends per share and trading volume between the pre- and post-announcement years.

Section 2 reviews the pertinent literature; section 3 describes the institutional arrangements that apply to stock dividends in Greece; section 4 describes the relevant testable hypotheses; section 5 describes the data and methodology; section 6 presents and interprets the findings; and finally, section 7 presents a summary and conclusions.

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[1] See Foster and Vickrey (1978), Woolridge (1983a,b), Grinblatt *et al.* (1984), Eades *et al.* (1984), Lakonishok and Lev (1987), and McNichols and Dravid (1990).

2. Literature review

Grinblatt *et al*. (1984) study stock dividends in the USA in the period 1967–76. They find a significant stock price reaction on the announcement day of stock dividends. This finding is interpreted as evidence in favor of the signalling hypothesis. That is, the ability of the firms to distribute cash dividends depends on the level of both current and retained earnings. Therefore, firms with strong future profits can afford to distribute stock dividends by using up retained earnings without impairing their ability to support their regular cash dividends. Firms with poor prospects are less inclined to have stock dividends because this reduces their reserves and hence their ability to supplement lower profits to pay cash dividends. The positive market reaction results are also consistent with the information release hypothesis. Firms whose insiders believe their stock is undervalued use stock dividends to attract publicity, investors' interest, and a review by financial analysts. This is expected to lead to a positive revaluation of the firm's prospects. Overvalued firms, on the other hand, have no incentive to attract market attention through a stock dividend.

McNichols and Dravid (1990) also test the informational content of stock dividends by analysing the role of the stock dividend percentage as a signalling indicator. They hypothesize that managers use stock dividends to bring the stock price back to its normal level. Consistent with this hypothesis, they find a positive relationship between the stock dividend percentage and the stock price prior to the distribution. They also find a negative relationship between the stock dividend percentage and the value of equity, which implies that larger capitalization firms have a higher normal price level. Further, they find a positive relationship between the stock dividend percentage and the deviation of future earnings from current earnings, which is consistent with the 'normal price' hypothesis.

Rankine and Stice (1997) confirm the positive signalling value of stock dividends by documenting that for stock distributions of the same size, those accounted for as stock dividends are associated with a significantly larger announcement excess return than those accounted for as stock splits.[2]

According to the market efficiency hypothesis, any market value effects caused by stock dividends must be fully discounted by the ex-dividend day. Hence, the stock price should adjust on the ex-dividend day only to the level justified by the stock dividend percentage. Woolridge (1983b) tests this theoretical prediction and finds that the price adjustment is less than what is consistent with the stock dividend percentage. Moreover, he finds that stocks with smaller stock dividend percentages have higher excess returns. Similar findings have been reported by Eades, Hess and Kim (1984) and Lakonishok and Vermaelen (1986). Frank and Jagannathan (1998) and Bali and Hite (1998) analyse stock returns on the ex-dividend day for US and Hong-Kong firms, respectively. Both studies develop models of investor behavior which are based on microstructure arguments (discreteness in trading prices and tick-size) and report positive abnormal returns consistent with such arguments.

Stock dividend distributions have been often associated with an expected increase in marketability. Lakonishok and Vermaelen (1986) find, instead, a drop in trading volume after the distribution, similar to the reported decline in marketability following stock splits documented by Copeland (1979).

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[2] Foster and Vickrey (1978) and Woolridge (1983a) also report positive market reaction to stock dividend announcements which is consistent with the signalling hypothesis.

Lakonishok and Lev (1987) analyse the characteristics of firms that had stock dividends in comparison to the corresponding characteristics of firms without stock dividends. They find that (a) stock dividend firms experience faster growth in profits prior to the distribution, but the growth difference disappears after the distribution; (b) stock dividend firms pay higher dividends after the distribution than firms without stock dividends; (c) there is no significant difference in prices between the two groups; (d) there are no differences in marketability before or after the distribution of stock dividends.

To summarize, stock dividend distributions in the USA are associated with a positive price reaction at the time of announcement which is attributed to positive informational effects. Similar positive price reaction is found at the ex-dividend day, which has been attributed to microstructure issues.[3]

3. Stock dividends in Greece

Following standard corporate practice, in Greece, stock dividend distributions are proposed by the board of directors and must be approved at the stockholders meeting along with the terms of the distribution, especially the ratio of new to old shares, and the ex-dividend day. Greek firms can distribute stock dividends out of current profits and/or reserves. The reserves of Greek firms consist of statutory retained earnings, reserves from the retainment of after-tax profits (beyond the statutory retained earnings), reserves from the retention of non-taxed profits, as well as reserves created from the revaluation of assets. Stock dividends can be distributed through an offsetting entry in any one of these accounts or a combination thereof.

a. *Capitalization of profits*

Greek firms can use their current profits to distribute stock dividends. In this case, the profits so used are transferred to the stock capital account.

According to the Greek tax code, until 1992, firms paid corporate taxes only on the undistributed profits, after deducting the amount allocated to tax-free reserves, if any. On any distributed cash or stock dividends, exchange-listed firms withheld personal taxes at rates of 42 or 45%, depending on whether the shares were registered or issued to the bearer, respectively. After receiving the cash or stock dividend, shareholders were liable to pay additional taxes or they were entitled to a refund, depending on whether their effective marginal personal tax rate exceeded or fell short of the

[3] Lasfer (1997a) examines a special type of stock dividend, scrip dividend that is an option given by several UK firms to their shareholders to receive shares in lieu of cash. As Lasfer explains, scrip dividends do create tax savings for tax-paying individual investors and they also may be motivated by signalling and cash shortage considerations. The empirical findings show positive and significant abnormal returns at the announcement of the intention of the firm to offer scrip dividends, but these abnormal returns are not different, at any conventional statistical level from the abnormal returns of a group of control firms associated with the announcement of cash dividends, suggesting that the scrip option does not provide any additional information beyond that conveyed by cash dividends. Furthermore, the author concludes that scrip dividends are not motivated by tax savings and signalling considerations, but they may be motivated by non-financial considerations. Lasfer (1997b), analysing a questionaire survey, concludes that the decision to offer a scrip dividend in lieu of cash is substantially affected by shareholders' pressure.

withholding tax rate. After 1992, the earnings before taxes are reduced by allocations to tax-free reserves, if any, and the remainder is taxed as corporate income. Any distribution of cash or stock dividends out of these net earnings is tax-free to the shareholders. Therefore, cash as well as stock dividends are not subjected to double taxation under the Greek tax system.[4]

It should be noted that the distribution of stock dividends out of current earnings is an extremely uncommon corporate event in Greece. As a result, the sample of the present study does not contain stock dividends paid out of current profits.

b. *Capitalization of reserves*

In this case, the amount affected is transferred from the reserves to the stock capital account. If the reserves represent accumulation of already taxed profits, the stock dividends are treated as a tax-free distribution. If, instead, the reserves were formed from non-taxed profits, the stock dividends are taxable as regular income. In practice, it is also uncommon for Greek firms to distribute stock dividends out of tax-free reserves (that is, reserves formed from non-taxed profits). Consistent with this corporate behavior, our sample does not include stock dividends distributed out of tax-free reserves.

c. *Capitalization of reserves from revaluation of assets*

Due to high levels of inflation in Greece since the early 1970s, a series of laws were enacted that required firms to revalue their assets, so that their book values would better reflect their current market values. The difference between the new and the old book value of assets was recorded as special reserve. In the period 1981–94, covered by this study, there were four legislative decrees (Laws 1249/1982, 1731/1987, 2665/1988 and 2065/1992) that mandated firms to form reserves from the revaluation of their assets. These decrees specified such terms as the amount of revaluation, the computational method, and the tax consequences. They also determined whether the capitalization of such reserves would be effected through a stock dividend distribution or an increase of the par value of the shares.[5] Stock dividends distributed out of this type of reserves are tax-free.

4. Testable hypotheses

a. *Announcement effects*

The signalling hypothesis of Grinblatt *et al.* (1984) and McNichols and Dravid (1990) suggests that announcements of stock dividends release positive information about future firm profitability. Therefore, announcements of stock dividends distributed at the discretion of the firm should be associated with positive excess stocks returns. To the contrary, stock dividends declared as a result of legislative decrees, as in the case of Greece, should not cause any signalling effect and, thus, should be associated with insignificant excess returns.

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[4] In addition, there are no capital gains taxes in Greece.

[5] One of these laws required that the capitalization of the resultant reserves be effected through a stock dividend distribution. The other three laws permitted the use of a stock dividend or par value adjustment.

Besides the signalling effect, stock dividend distributions, by increasing the number of shares, may improve liquidity (Copeland, 1979; Lakonishok and Vermalean, 1986) and expand the investor base (Merton, 1987) and, thus, cause a price increase. A more direct test of these effects can be conducted on a sample of stock dividend events in which the signalling effect is absent. The legislative decrees 1249/1982, 1731/1987 and 2065/1992 gave Greek firms the option to capitalize the reserves formed from the revaluation of assets either through a stock dividend or an increase of the share par value. Therefore, the market's reaction to any anticipated liquidity improvement or enhanced investor base, associated with these stock dividends, can be detected only at the time the firms announce their choice to capitalize asset revaluation reserves through a stock dividend.[6] Consistent with the improved liquidity and investor base hypotheses, the announcement of such stock dividend distributions (induced by the above three decrees) should be associated with positive excess stock returns.

b. *Ex-dividend day effects*

In the pre-1992 period, stock dividend distributions that were taxable (i.e., paid out of current earnings or tax-free reserves) could be associated with a tax effect on the ex-dividend day similar to that modeled in Elton and Gruber (1970). However, as noted in 3a and 3b above, our sample does not contain such distributions. Therefore, in Greece, the stock returns on the ex-dividend day should not reflect any tax effects, implying zero excess returns associated with this factor. However, as it has been demonstrated by Bali and Hite (1998) and Frank and Jagannathan (1998), microstructure effects (discreteness in trading prices, tick size) may give rise to positive excess returns on the ex-dividend day, even in the absence of tax effects. Thus, the ex-dividend stock price behavior, associated with stock dividends, becomes an interesting empirical issue.

5. Data and methodology

a. *Market reaction tests*

The total sample includes all cases of stock dividends undertaken by firms traded in the Athens Stock Exchange (ASE), declared in the period 1981–94, which were not announced concurrently with equity increases through cash. Sources for these data include: publications of the ASE, the Greek daily and periodical press, the data bank of stock prices in 1981–90 (Travlos, 1992), and additional stock price data collected for the period 1991–94.[7]

There were a total of 178 stock dividends in the period studied. Thirty-eight cases were deleted from the original sample due to the lack of publicly available information, reducing the sample to 140 stock dividends. Only stocks traded on the main segment of the ASE were included in the sample.

[6] Stock dividend events resulting from the legislative decree 2665/1988, which required capitalization only through a stock dividend, should be excluded from this test because any valuation effects related to liquidity and investor base gains should have been reflected in stock prices at the time the law was announced.

[7] Stock prices have been adjusted for stock splits, stock dividends and rights offerings.

Table 1

Frequency of stock dividends by type of capitalized reserves of firms listed on the Athens Stock Exchange years 1981–94.

	Capitalization of reserves from revaluation of fixed assets (Laws 1249/82, 1731//87, 2665/88, 2065/92)	Combined capitalizations[1]	Capitalization of reserves from already taxed profits	Total
1981				—
1982	14	5		19
1983				—
1984				—
1985				—
1986				—
1987				—
1988	10	4		14
1989	25	6	3	34
1990			1	1
1991		1	3	4
1992		15		15
1993	8	7		15
1994	12	23	3	38
TOTAL	69	61	10	140

[1] It includes combined capitalizations of reserves from revaluation of fixed assets and capitalization of reserves from already taxed profits.

Table 1 presents the distribution of stock dividends by type of capitalized reserves. The majority of the stock dividends comes from reserves due to the revaluation of assets. Specifically, 69 stock dividends fall in this category. Sixty-one cases involve combined capitalizations of reserves from revaluation of fixed assets and reserves from already taxed profits. Finally, 10 stock dividend distributions involve the capitalization of reserves from already taxed profits.[8]

There are four critical dates associated with stock dividends: (a) the date of the board of directors meeting during which the board proposes the distribution and calls for the shareholders meeting; (b) the date of publication of the call of the shareholders meeting; (c) the date the shareholders meet, which by law should follow the call to meet by at least 20 days; and (d) the ex-dividend day for the stock dividend, i.e., the date when shares are no longer sold with the right to participate in the stock dividend.

The first time the market finds out about the payment of the stock dividend is the date of the announcement (publication), in the Daily Bulletin of the ASE, of the call of the shareholders meeting, date (b) above. This date is also confirmed by searching the daily financial press during the pertinent period. This date is used as the first announcement day of the stock dividend. This event is not anticipated and no public

[8] As mentioned earlier, the samples analyzed in this study do not include taxable stock dividends.

information related to it is available prior to the first announcement day.[9] The day the stock goes ex-dividend is the second event day around which we test for market reaction.

We follow the event type methodology (as described by Brown and Warner, 1980, 1985) to test for the market reaction by analyzing excess returns. We compute excess returns according to the 'market-adjusted' model.[10] Specifically, for each stock j and day t, we calculate an excess return, ER_{jt}, as

$$ER_{jt} = R_{jt} - R_{mt}$$

where R_{jt} is the return of stock j on day t and R_{mt} is the return of the proxy for the market portfolio on day t. According to the 'market-adjusted' model, the return of the market portfolio captures the normal theoretical return of each stock. The index of the ASE is used as the proxy for the market portfolio. We also compute cumulative excess returns for each day in the event window.

To apply the event type methodology, returns are computed over 151 days, from day −140 to day +10 relative to the stock dividend announcement day, which is day 0. Following Brown and Warner (1980, 1985), in case of missing returns, parameter estimation excludes both the day of the missing return and the return of the subsequent day. To avoid the computation of returns from a small number of transaction prices, stocks with fewer than 30 trading days in the estimation period, day −140 to day −41, were deleted from the sample. This resulted in a final sample of 85 stock dividend observations for the test of price reaction around the first announcement day and 99 stock dividend observations for the test regarding the ex-dividend day market reaction.[11] Out of the sample of 85 stock dividends for 32 cases the stock dividend is the only item on the agenda of the shareholders meeting. For the remaining 53 cases the agenda includes some routine items, such as approval of fees to directors, appointment of auditing firm, and approval of financial statements.

Table 2 presents summary statistics (mean, median and standard deviation) of sample firms for the size (market value of equity), the capitalized reserves and the proportion of stock dividend relative to number of traded shares. As it is shown in Table 2, for the average sample firm the stock dividend represents a large increase of the number of shares outstanding.

b. *Analysis of earnings per share, dividend per share and trading volume*

The signalling effect associated with stock dividends is consistent with the prediction of a positive change in earnings and/or dividends per share following such

[9] Typically, this date falls two days after the board meeting. The date of the board meeting is not announced publicly; the public may find out about the board meeting afterwards, through the call for the shareholders meeting.

[10] The market-adjusted model was used to avoid problems associated with the estimation of beta in thin markets. See Papaioannou and Philippatos (1982). Excess returns were also obtained by using the mean-adjusted and the market model. The results are qualitatively similar to those reported here.

[11] For a number of firms, we had information regarding the ex-dividend day, but not the announcement day. This resulted in a smaller sample of firms for the announcement day tests.

Table 2

Summary statistics of sample of stock dividends of firms listed on the Athens Stock Exchange, years 1981–94.

	Market value of equity before stock dividend (in GRD)	Reserves capitalized (in GRD)	Increase of shares outstanding
Average	14,623,651,378	1,572,432,457	69%
Median	5,819,500,000	436,366,500	30%
Standard Deviation	24,492,681,328	4,255,724,373	70%
N	85	85	85

distributions. Since stock dividends declared by Greek firms lack, in general, signalling value, we predict insignificant changes in earnings and dividends per share, respectively. In addition, if stock dividends lead to improved liquidity, we should observe an increase in the trading volume of the affected stocks.

To test these predictions, we collected data on earnings and dividends per share and on trading volume for 3 years prior and 3 years following the year of the stock dividend.[12] Earnings and dividends per share are adjusted for any distributions (e.g., stock splits and dividends and rights offerings). To account for possible effects of inflation and economic growth on corporate earnings and dividends, empirical studies usually adjust these variables by accounting for industry trends. Due to industry data limitations, earnings and dividends were adjusted every year by the growth rate of the nominal gross domestic product (GDP). Trading volume is measured in terms of share turnover and market-adjusted share turnover. Share turnover (ST) is defined as the ratio of trading volume of each firm to shares outstanding. Market-adjusted share turnover is measured by the ratio of share turnover to market turnover, where market turnover is defined as the ratio of annual market trading volume to the number of outstanding shares in the market.

Sample medians are calculated for the two periods, pre (year -3 to year -1) and post (year $+1$ to year $+3$), relative to the announcement year, for the variables earnings per share (raw and adjusted), dividends per share (raw and adjusted) and trading volume (share turnover and market-adjusted share turnover). The statistical comparison of the medians across the two periods is based on the Wilcoxon test which is a non-parametric matched pair test of the equality of medians.

[12] In order to compare the academic view on the subject with the corresponding one of practitioners, we also investigated the views of Greek executives regarding stock dividends, through the use of a questionnaire, similar to those used by Eisemann and Moses (1987) and Baker and Phillips (1993) in the USA. The questionnaire, which is not included in the paper but is available from the authors, contained 32 questions and it was mailed to senior managers of firms listed on the Athens Stock Exchange, managers of securities firms, and managers of mutual funds. The sample of recipients included 289 individuals of which only 60 responded with usable questionnaires (a 20.76% response rate).

6. Empirical findings

a. *Market reaction*

Table 3 reports average sample excess returns, cumulative excess returns, and t statistics for daily excess returns in the test period from day −10 to day +10 relative to the announcement day 0. Panel A presents the findings for the overall sample of 85 stock dividends. As reported in section 5a, in 53 cases of this sample the agenda of the shareholders meeting includes, in addition to stock dividends, some other routine items. Panel B reports results for 32 events for which stock dividend is the only agenda item.

On the event (announcement) day 0, the average excess return is 0.32% with a t value of 0.89, implying statistical insignificance at any conventional level. Similarly, the average excess return of 0.42% on day −1 is insignificant ($t = 1.17$). Qualitatively similar results are reported in Panel B for event days −1 and 0. These findings suggest that the announcement of a stock dividend distribution by Greek firms is not associated with a stock price reaction. These findings are in contrast to those reported in empirical studies for US stock dividend distributions. The positive price reaction in the case of US firm stock dividends has been attributed mainly to signalling effects. As mentioned above, Greek firms typically distribute stock dividends as a result of legislative decrees; hence, stock dividends may not have any signalling implications in Greece, a hypothesis which is supported by the present evidence.

Table 4 presents results for the sample of 41 stock dividends by firms which had the choice to capitalize the reserves by increasing the par value of their shares, but chose instead to issue stock dividends. Since signalling effects are also absent in this sample of stock dividends, this sample allows to conduct a more direct test of alternative hypotheses associated with stock dividend announcements, such as improved liquidity and enhanced investor base.

As shown in Table 4, the excess returns are statistically insignificant at any level of significance for all days in the event period day −10 to day +10.

For example, the excess returns on days 0 and −1 are, respectively, 0.52% and 0.21% with corresponding t values of 1.09 and 0.43. These findings do not support the valuation

Table 3

Average excess returns (ER), cumulative average excess returns (CER) and t-statistics of ER (t[ER]) for the period of 10 days before through 10 days after the announcement date of the stock dividends of firms listed on the Athens Stock Exchange, years 1981–94.

Period	N	Percentage of positive excess returns	ER	CER	t [ER]
Panel A:					
Overall sample (N = 85)					
−10	62	53.23	0.0018	0.0018	0.5082
−9	63	55.56	0.0049	0.0068	1.3864
−8	64	51.56	−0.0009	0.0058	−0.2643
−7	62	53.23	−0.0001	0.0057	−0.0333

(*continued*)

Table 3
Continued.

Period	N	Percentage of positive excess returns	ER	CER	*t* [ER]
−6	61	55.74	0.0010	0.0067	0.2733
−5	63	38.10	−0.0008	0.0058	−0.2375
−4	64	45.31	−0.0010	0.0048	−0.2733
−3	68	54.41	0.0031	0.0079	0.8586
−2	68	48.53	0.0020	0.0099	0.5654
−1	65	63.08	0.0042	0.0141	1.1665
0	67	61.19	0.0032	0.0173	0.8913
1	63	47.62	0.0009	0.0182	0.2503
2	64	53.13	0.0033	0.0214	0.9144
3	68	47.06	0.0019	0.0233	0.5381
4	70	55.71	0.0047	0.0281	1.3311
5	68	55.88	0.0024	0.0305	0.6789
6	68	51.47	−0.0020	0.0285	−0.5604
7	73	49.32	0.0032	0.0317	0.9076
8	70	60.00	0.0034	0.0352	0.9607
9	70	48.57	0.0035	0.0386	0.9697
10	68	39.71	−0.0007	0.0379	−0.1929
Panel B:					
Stock dividends were the only item on the agenda of the shareholders meeting (N = 32)					
−10	22	59.09	0.0049	0.0049	0.9649
−9	24	58.33	0.0095	0.0144	1.8916*
−8	24	45.83	−0.0066	0.0077	−1.3191
−7	23	60.87	0.0030	0.0108	0.5990
−6	23	56.52	0.0037	0.0145	0.7338
−5	25	40.00	0.0023	0.0168	0.4582
−4	26	34.62	−0.0118	0.0050	−2.3436**
−3	27	48.15	−0.0001	0.0048	−0.0292
−2	27	48.15	0.0049	0.0097	0.9737
−1	25	52.00	0.0006	0.0104	0.1283
0	26	53.85	0.0028	0.0132	0.5612
1	26	30.77	−0.0033	0.0099	−0.6587
2	26	57.69	0.0029	0.0128	0.5786
3	26	57.69	0.0077	0.0205	1.5223
4	28	53.57	0.0055	0.0260	1.1006
5	28	50.00	0.0015	0.0275	0.2956
6	29	44.83	−0.0073	0.0202	−1.4536
7	29	34.48	−0.0048	0.0154	−0.9473
8	26	57.69	0.0024	0.0178	0.4700
9	27	44.44	0.0002	0.0180	0.0469
10	28	39.29	−0.0004	0.0176	−0.0746

* Significant at the 0.10 level
** Significant at the 0.01 level

Table 4

Average excess returns (ER), cumulative average excess returns (CER) and *t*-statistics of ER (*t*[ER]) for the period of 10 days before through 10 days after the announcement day of the stock dividends of firms listed on the Athens Stock Exchange, years 1981–1994. (The firms included here had a choice of selecting a stock dividend over an adjustment of the share's par value). (N = 41)

Period	N	Percentage of positive excess returns	ER	CER	*t* [ER]
−10	33	60.61	0.0046	0.0046	0.9569
−9	35	42.86	0.0005	0.0050	0.0967
−8	34	47.06	−0.0044	0.0006	−0.9231
−7	33	45.45	−0.0011	−0.0005	−0.2362
−6	31	58.06	0.0018	0.0013	0.3736
−5	32	50.00	0.0040	0.0053	0.8328
−4	31	48.39	−0.0014	0.0038	−0.3013
−3	32	56.25	0.0029	0.0067	0.6050
−2	33	54.55	0.0044	0.0111	0.9187
−1	32	62.50	0.0021	0.0132	0.4340
0	31	54.84	0.0052	0.0184	1.0867
1	31	51.61	−0.0030	0.0154	−0.6269
2	33	51.52	0.0013	0.0167	0.2700
3	33	39.39	−0.0032	0.0134	−0.6762
4	35	62.86	0.0069	0.0204	1.4495
5	35	62.86	0.0064	0.0268	1.3431
6	35	54.29	−0.0016	0.0252	−0.3318
7	36	50.00	−0.0002	0.0250	−0.0460
8	33	69.70	0.0076	0.0326	1.5985
9	34	47.06	0.0049	0.0375	1.0139
10	32	40.63	−0.0013	0.0362	−0.2750

effects predicted by the improved liquidity and enhanced investor base hypotheses. These findings contribute to the limited evidence on the relationship between stock dividend announcement returns and liquidity (Baker, Phillips, and Powell, 1995). The contribution stems from the fact that prior studies have been unable to test directly these alternative hypotheses because of the contemporaneous presence of signalling effects.

Table 5 reports average daily excess returns, cumulative excess returns, and values of the *t* statistic over the test period of day −10 to day +10 around the event day 0, which is identified now as the ex-dividend day.

On the event day 0, the average excess return of the sample of stock dividend events is 0.37% with a *t* statistic of 1.23, which is insignificant. On day −1 the average excess return is 0.06% with also an insignificant *t* value of 0.20. Since the sample consists of tax-free stock dividends, these findings are consistent with the predictable hypothesis of insignificant ex-dividend day price effects. This study, in contrast to prior evidence from the USA and Hong-Kong, does not document positive ex-dividend day excess returns.

Table 5

Average excess returns (ER), cumulative average excess returns (CER) and *t*-statistics of ER (*t*[ER]) for the period of 10 days before through 10 days after the ex-dividend day of the stock dividends of firms listed on the Athens Stock Exchange, years 1981–94 (N = 99).

Period	N	Percentage of positive excess returns	ER	CER	*t* [ER]
−10	77	50.65	−0.0010	−0.0010	−0.3250
−9	78	58.97	0.0041	0.0031	1.3727
−8	81	49.38	0.0025	0.0056	0.8403
−7	81	51.85	0.0013	0.0070	0.4403
−6	78	66.67	0.0079	0.0148	2.6306**
−5	78	51.28	0.0007	0.0155	0.2221
−4	83	51.81	0.0013	0.0168	0.4446
−3	59	72.88	0.0037	0.0205	1.2249
−2	58	60.34	0.0045	0.0249	1.4969
−1	69	52.17	0.0006	0.0255	0.2010
0	63	52.38	0.0037	0.0292	1.2288
1	70	54.29	0.0044	0.0337	1.4886
2	73	45.21	−0.0006	0.0330	−0.2146
3	75	58.67	0.0085	0.0415	2.8305**
4	81	49.38	−0.0001	0.0414	−0.0237
5	83	56.63	0.0018	0.0432	0.5884
6	83	53.01	0.0044	0.0475	1.4594
7	82	53.66	0.0071	0.0547	2.3861**
8	80	46.25	−0.0003	0.0544	−0.0966
9	81	40.74	−0.0055	0.0489	−1.8278*
10	80	40.00	0.0016	0.0505	0.5316

* Significant at the 0.10 level
** Significant at the 0.01 level

b. *Earnings per share, dividends per share and trading volume*

Table 6 presents median earnings per share (raw and adjusted), median dividends per share (raw and adjusted) and trading volume (share turnover and market-adjusted share turnover) for the pre- and post-announcement periods (year −3 to year −1) and (year +1 to year +3), respectively, relative to the announcement year. This table also reports the Wilcoxon test of the equality of medians.

As shown in Table 6, there are no significant differences across the two periods in earnings per share and dividends per share. Regarding the trading volume, it is interesting to notice that, on an unadjusted basis (share turnover), there is a significant increase in the trading volume in the post stock dividend period. However, when the overall stock market trading activity is considered, the trading volume, as measured by the market-adjusted share turnover, shows a statistically significant decline at the 0.05 level.[13]

[13] Qualitatively similar findings are obtained by comparing the periods, year −1 to year +1.

Table 6

Median earnings per share (raw and adjusted), median dividends per share (raw and adjusted) and median trading volume (share turnover and market-adjusted share turnover) in the pre-announcement (year = −3 to year = −1) and post-announcement (year = +1 to year = +3) periods, relative to the announcement year 0, of stock dividends of firms listed on the Athens Stock Exchange, years 1981–94.

	Median earnings per share (in GRD)		Median dividends per share (in GRD)		Median trading volume	
	Raw	Adjusted	Raw	Adjusted	Share turnover (ST)	Market-adjusted share turnover (ST/market turnover)
Pre-announcement (year = −3 to year = −1)	345.32	261.97	184.22	137.63	0.108	1.1075
Post-announcement (year = +1 to year = +3)	418.14	211.67	296.76	147.88	0.195	0.8715
Wilcoxon value	1.0299	1.2065	1.3584	1.0610	2.7338	2.0052
probability	(0.3031)	(0.2276)	(0.1743)	(0.2887)	(0.0063)***	(0.0444)**

Median Earnings Per Share: Raw median earnings per share are based on earnings per share as they are reported in the firms' financial statements, while, Adjusted median earnings per share are based on earnings per share adjusted by the growth of Gross Domestic Product (GDP) over the corresponding years.
Median Dividends Per Share: Raw median dividends per share are based on dividends per share as they are reported in the firms' financial statements, while, Adjusted median dividends per share are based on dividends per share adjusted by the growth of Gross Domestic Product (GDP) over the corresponding years.
Median Trading Volume: Share Turnover (ST) is defined as the ratio of trading volume of each firm to shares outstanding. Market-adjusted Share Turnover is defined as the ratio of Share Turnover (ST) to Market Turnover, where Market Turnover is defined as the ratio of annual market trading volume to the outstanding shares in the market. Wilcoxon test is a nonparametric matched pair test of the equality of medians in the pre-announcement and post-announcement periods.
The significance at the 0.05, and 0.01 significance levels is denoted by **, and ***, respectively.

These findings provide no support to the view that stock dividends are associated with earnings and dividend increases and with greater marketability.[14,15] More specifically, the insignificant changes of earnings and dividends are consistent with the insignificant announcement excess returns predicted by the absence of signalling effects in stock dividend distributions by Greek firms. The findings regarding liquidity

[14] The finding on marketability is interesting, given that the median increase of shares outstanding associated with the distribution of stock dividends by sample firms is 30%.

[15] As suggested by an anonymous referee, the marketability and signalling effects could be highlighted better by analysing the difference in stock price reaction, changes in earnings per

are consistent with the evidence of a declining trading volume reported in Lakonishok and Vermalean (1986).[16]

7. Summary and conclusions

This study analysed the market price reaction to stock dividends, in Greece, on both the announcement and the ex-dividend day. It also compared the earnings per share, dividends per share and trading volume of stocks with such distributions between the pre- and post-announcement years.

The market reaction tests showed no statistically significant adjustment of prices over and beyond what one would expect as a result of the stock dividend. That is, excess returns were not statistically different from zero around the announcement day, or the ex-dividend day. The tests also did not reveal any significant changes in median earnings per share and dividends per share. There is evidence of a statistically significant decline of the trading volume in the post-stock dividend period.

These tests offer new insights on stock dividends from a stock market that differs from the US market, regarding the institutional framework applicable to stock dividend distributions. Specifically, in the USA, firms have discretionary power to declare stock dividends; thus, the associated reduction of retained earnings has implications regarding firms' ability to distribute cash dividends. Therefore, stock dividends can convey significant information to investors about insiders' expectations. Accordingly, studies of stock dividends in the USA have documented significant positive price reaction around the announcement day. In Greece, by contrast, stock dividends result mostly from the formation of reserves from asset revaluation. These revaluations are mandated by law, along with the provision (in most cases) that they must be effected through a stock dividend distribution. Hence, the legal arrangement

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share, dividends per share and trading volume between companies with high and those with low stock dividend distributions. To that effect, Table 6 was reproduced for two groups of sample firms. First, for those with a stock dividend distribution smaller than the sample median. Second, for those with a stock dividend distribution larger than the sample median. Regarding the changes in earnings per share and dividends per share the findings are qualitatively similar to those reported in Table 6 for the overall sample. Regarding the trading volume, contrary to the marketability effect, the unadjusted share turnover increases for firms with stock dividend distribution below the sample median. Furthermore, firms with stock dividend distribution above the sample median experience a significant decline in market-adjusted share turnover. In addition, a cross-sectional regression of the excess returns (for days $-1, 0$, and $(-1, 0)$) was run on a dummy variable (DUMMY $= 0$ for firms with stock dividend distribution less than the sample median; DUMMY $= 1$ for firms with stock dividend distribution larger than the sample median). The coefficient of the dummy variable is statistically insignificant at any conventional level of significance. Also, the above regression was run on the proportion of the new shares issued through stock dividends; the regression coefficient of the independent variable is also statistically insignificant at any conventional level.

[16] It is interesting to contrast these findings with those based on the survey of the practitioners' views. Consistent with the findings of similar surveys in the USA (Eisemann and Moses, 1987), there is strong agreement among the Greek executives that stock dividends are motivated by the desire of the firms to signal quality, facilitate equity raising, adjust stock prices to 'normal levels' and improve marketability. The respondents also expected stock dividends to increase corporate wealth, trading volume and ownership dispersion.

in Greece deprives stock dividends of the element of surprise and, thus, it reduces significantly their information content. Consistent with this prediction, there is no evidence of significant market reaction at the announcement day.

The contribution of this study is threefold: first, the findings complete the empirical evidence on the signalling hypothesis on stock dividends. That is, in institutional environments where signalling effects exist, announcement excess returns have been found to be positive. Conversely, in capital markets where stock dividends are deprived of signalling effects, announcement excess returns are insignificant. Second, this study allows to conduct a more direct test of whether market reaction at the announcement of stock dividends can be alternatively explained by the value effects of improved liquidity and enhanced investor attention. Third, the absence of market reaction on the ex-dividend day is consistent with the absence of tax effects in the sample analysed in this study.

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