The Market Reaction on Ex-return of Capital Dates During Financially Constraint Periods

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1 Introduction

Since the seminal paper of Miller and Modigliani (1961) according to which under a perfect market with no frictions (i.e., taxes, commissions, etc.) the value of a firm is unaffected by its dividend policy, several empirical and theoretical studies have been published to explicate the dividend policy puzzle. Among the issues that have been at the epicenter of the academic research was the stock price behavior around ex-dividend dates, the so-called ex-dividend day phenomenon, where stock prices fall by less than the amount of the dividend distributed. This price imbalance surrounding ex-dividend dates has been proven to furnish notable gains to those trading around these dates and stimulating more investors to capture dividends.

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Campbell and Beranek (1955) were the first researchers who found that stock prices did not fall by the dividend amount around ex-dividend dates, using data from a small sample of NYSE firms. Since then, the ex-dividend phenomenon intrigued several academics to gauge the wealth effects emanating from the stock price abnormality surrounding ex-dates and delve into the drivers of this market reaction. The first hypothesis that was put forward to decode the market reaction around ex-dates was the tax-effect of Elton and Gruber (1970) according to which the favorable tax treatment of capital gains compared to dividends creates dividend clienteles where low (high) dividend yield stocks are held by high (low) tax bracket investors (Bali and Francis 2016). However, the tax-effect hypothesis has been disputed by several authors. First by Kalay (1982) who claimed that the differences detected in stock price drops can be explained by the transaction costs of potential arbitrageurs (Munoz and Rodriguez 2017). In particular, when transaction costs are low enough, any deviation from a one-for-one price drop-to dividend relationship creates an arbitrage opportunity for those investors facing low transaction costs (i.e., stock brokers, traders, endowments, etc.). This explanation has been known as "the short-term trading hypothesis". Finally, a strand of studies has proposed market microstructure explanations such as bid-ask spread, price discreteness due to minimum tick sizes, or absence of electronic settlement systems (Asimakopoulos et al. 2015).

This study examines the stock price reaction and the ensuing wealth effects surrounding ex-dates of a special profit distribution known as a return of capital which is considered to be an alternative cash distribution to shareholders. In specific, the return of capital is a cash payment to shareholders from capitalized retained earnings that are tax free and are paid out in lieu of cash dividends. This special profit distribution became the dominant mechanism of payout policy for the majority of the Greek listed firms since 2009 when for the first time, dividend income was taxed at both corporate and investor level, and the sovereign debt crisis of Greece was on the way. Very soon, the tax rate on dividends saw an unprecedented increase that led most of the profitable firms to seek alternative ways of distributing profits to their shareholders such as the return of capital. Using a unique dataset of 149 returns of

capital that the Greek listed firms distributed between 2002 and 2015, I explore the stock price behavior surrounding the ex-dates and gauge the wealth effects using the classical event study methodology. The investigation of the stock price behavior on ex-return of capital dates is extended in the pre- and post-debt crisis period in order to identify potentially different market reaction during these two discernible periods. Finally, I delve into the drivers of the stock price abnormality surrounding the ex-return of capital dates.

The Greek capital market presents some unique institutional characteristics that are rarely observed in other developed markets. According to Asimakopoulos et al. (2015) and Dasilas (2009), market microstructure impediments (i.e., bid-ask spread, market makers, price discreteness, tick size, and limit order adjustment mechanism) that prevent stock prices from falling the full amount of dividend distributed on ex-dividend dates are not present. Moreover, until 2008, both dividends and capital gains were tax free. A flat tax rate of 10% on dividend income was imposed for the first time in 2009. Since then, the tax treatment of dividends underwent several changes raising the tax rate on dividend income to 25% and in some cases even more (based on the tax bracket of investors). During the whole period, capital gains were tax free. The heavy tax treatment of dividends coincided in a period when Greece was inflicted by the sovereign debt crisis; the bank lending was squeezed, and the access to international markets was interrupted. At the same time, there were massive sell-offs on the part of investors thus driving down the market value of almost all Greek listed firms to rock-bottom levels. In such adverse investment environment, the distribution of tax-free cash money to shareholders was pivotal for the Greek listed firms in an attempt to keep investors' interest alive. The appropriate mechanism was the payment of return of capital to shareholders.

This study contributes to the existing literature in several ways. To the best of my knowledge, this is the first study that investigates the market reaction of this special cash payment (i.e., return of capital) to investors. Furthermore, this is the first study that gauges the wealth effects of cash payments after the outbreak of the sovereign debt crisis in Greece. Moreover, it provides a better understanding of the market pricing in a tax-free environment that offers profitable strategies to investors to

exploit capital gains surrounding cash distributions. Finally, the current study explains how firms can disgorge tax-free cash streams to their shareholders taking advantage of the loops of the corporate law.

The remainder of this paper is organized as follows. Section 2 presents a brief literature review regarding the ex-dividend day phenomenon. Section 3 describes the legal framework of the profit distribution in Greece. Section 4 outlines the methodology and data employed in this study. Section 5 presents the empirical results, and Sect. 6 summarizes the main finding of the study and discusses their implications.

2 Prior Research

The empirical investigation of the stock price reaction on ex-dividend days dates back to 1955 when Campbell and Beranek, using data from NYSE stocks, found that stock prices dropped 90% of the dividend amount on ex-dates. Five years later, Durand and May (1960) found that the average price change from the cum-dividend day (the last day that the stockholder has the right to receive the dividend) to the ex-dividend day was 4% less than the dividend distributed by the American Telephone and Telegraph stock (AT&T). However, the aforementioned studies did not examine the determinants of the ex-dividend day phenomenon.

The study of Elton and Gruber (1970) set the foundations for the tax-effect or long-term trading' hypothesis according to which the unfavorable tax treatment of dividends vis-`a-vis capital gains was responsible for the smaller stock price drop compared to the dividend paid on ex-dividend dates. Elton and Gruber (1970) claimed that an investor would be indifferent to sell his stock that pays dividends on the cum-dividend date or on the ex-dividend date if the following relationship holds:

$$P_c - (P_c - P_o) * t_g = P_e - (P_e - P_o) * t_g + D * (1 - t_d) \quad (1)$$

Rearranging Eq. (1) we get:

$$\frac{P_c - P_e}{D} = \frac{1 - t_d}{1 - t_g} \quad (2)$$

where, P_c is the stock price on the last cum-dividend day, P_e is the stock price on the ex-dividend day, P_o is the price at which the stock was acquired, D is the total dividend amount, and t_d and t_g are the tax rates on dividend income and capital gains, respectively. According to Elton and Gruber (1970), the ratio $\frac{P_c - P_e}{D}$ (or $\Delta P/D$) reflects the marginal tax rates of the marginal shareholders. The authors also found that the drop-off ratio ($\Delta P/D$) generally increases with dividend yield, suggesting that investors in lower tax brackets prefer stocks with higher dividend yields, while higher-bracket investors prefer lower-yield stocks, thus confirming Miller and Modigliani's (1961) dividend clientele effect.

The tax-effect hypothesis of Elton and Gruber (1970) was disputed by Kalay (1982) who proposed the short-term trading hypothesis according to which short-term, tax-neutral traders would arbitrage away any deviation from the theoretical value of the drop-off ratio (Bali and Francis 2016). In particular, if the expected stock price drop is greater than the dividend, the investor could sell short cum-dividend and buy back ex-dividend. In this case, the investor gains the amount of the price drop since he or she buys back at a lower price to close the short position (Dasilas 2009). If the stock price drop is less than the dividend, the investor will buy cum-dividend and sell ex-dividend.

Apart from the heterogeneous tax treatment of dividend income and capital gains and the existence of transaction costs, market microstructure impediments (such as tick size, bid-ask spread and limit order adjustment mechanism) were also propounded to explain the ex-dividend day phenomenon. Bali and Hite (1998) employed a sample of both cash dividends and nontaxable distributions from the NYSE and AMEX and found that the ex-dividend day price drop is restricted by tick size. This happens because the market systematically rounds down the dividend to the nearest tick, while the dividend is continuous. In this case, the stock price on the ex-dividend day will be less than the dividend distributed thus furnishing positive abnormal returns on the ex-day (Asimakopoulos et al. 2015).

Frank and Jagannathan (1998) explored the ex-dividend day stock price behavior on the Hong Kong Stock Market (HKSE), where neither

dividends nor capital gains were taxed,[1] and there were no market makers until 1993. Their results revealed that stock prices dropped on the ex-dividend day by half the amount of dividend paid. The authors attributed this to the bid-ask spread effect. This happens because the process of collecting and reinvesting dividends is nuisance for the average investor. Contrarily, market makers prefer to receive dividends and buy stocks on the cum-dividend day and resell them after the stock goes ex-dividend. Therefore, the price drop on the ex-dividend day is caused by the bid-ask bounce since most of the transactions occur at the bid price before the ex-dividend date and at the ask price on the ex-dividend date. This mechanism is responsible for the existence of positive abnormal returns surrounding ex-days. Graham et al. (2003) and Jakob and Ma (2004) supported the bid-ask bounce as an explanation of the ex-dividend stock price anomaly. They found that as the discreteness was eliminated in the US markets, the ex-dividend price drop anomaly was actually increased, contrary to what the price-discreteness hypothesis predicted.

Jakob and Ma (2007) examined stocks listed on the Toronto stock exchange (TSX) and concluded that the lack of an order adjustment mechanism along with relatively low trading volume resulted in incomplete price adjustments on ex-dividend days. Akhmedov and Jakob (2010) examined the ex-dividend day behavior of stocks listed on the Copenhagen Stock Exchange, and their findings were consistent with the limit order adjustment explanations of Dubofsky (1992) and Jakob and Ma (2007). In particular, Dubofksy (1992) investigated the effect of NYSE Rule 118 and AMEX Rule 132 on the ex-dividend day stock price anomaly. According to NYSE 112 and AMEX 132, open limit orders to buy stocks are reduced by the cash dividend amount on ex-dividend days. If the resulting price is not a tick multiple, it is further lowered to the next tick. Prices in limit sell orders are not adjusted. For example, if the tick size is $0.125 ($1/8) and the dividend is $0.15, then the price of limit buy orders will be adjusted down by $0.25 and limit sell orders will not be adjusted.

Dasilas (2009) delved into the ex-dividend stock price and trading volume behavior in the Greek stock market for the period 2000–2004. During this period, both dividend income and capital

gains were tax free, and market makers were essentially absent from the market. Employing different methods to gauge the stock price drop on ex-dates, he found that the mean drop-off ratio was significantly less than the amount of the dividend paid. Moreover, he found excess returns of more than 9% on the ex-dividend day. By sorting the ex-dividend day abnormal returns and trading volume according to dividend yield and transaction costs, the author found a positive relationship between the ex-dividend day abnormal returns, transaction costs, and dividend yield. On the other hand, the relationship between the ex-dividend day abnormal trading volume and dividend yield was positive, whereas that between the ex-dividend day abnormal trading volume and transaction costs was negative. These results were in line with the predictions of the short-term trading hypothesis as described by Lakonishok and Vermaelen (1986). Finally, the author performed a cross-sectional regression analysis and found that dividend yield and transaction costs were the main determinants of stock price behavior on ex-dividend days.

More recently, Asimakopoulos et al. (2015) investigated the ex-dividend day stock price behavior for a sample of 50 listed firms on the Athens Stock Exchange (ASE) from 1996 to 2005. The authors divided the examination period into two subperiods; the first subperiod (1996–2000) was referred to the period before the introduction of the new ex-dividend day price adjustment method,[2] and the second period (2001–2005) comprised the years after the initiation of the adjustment method. The focus of the study was the stock price and trading volume around ex-dividend dates as well as the determinants of the abnormal behavior around these dates. Asimakopoulos et al. (2015) demonstrated that the new adjustment method significantly altered the ex-dividend day stock price behavior on the ASE. In fact, the drop-off ratio increased from 37 to 62%, and the ex-day abnormal returns decreased from 2.26 to 1.18%, though statistically significant as they were before the initiation of the adjustment method. Abnormal volume remained unaltered between the two periods, though slightly smaller in the period 2001–2005. The authors did not observe any clientele effect during the whole period; however, the share illiquidity was found to be the dominant driver of ex-day returns.

The current study examines the ex-day stock price behavior of a special cash distribution knows as return of capital. This profit distribution is tax free for the whole period under examination. Capital gains are also tax free and therefore, the tax-effect hypothesis of Elton and Gruber (1970) could not find fertile ground for the Greek listed firms. Moreover, the tick size is minimal for the majority of stocks traded on the ASE, thus precluding the existence of the tick size effect and the price discreteness on ex-dates. Market making was first introduced in June of 2001 and remains limited to very few large firms based on market capitalization.[3] Finally, the ASE operates in an electronic system; however, there is no adjustment mechanism that affects the price drop on the ex-dividend day as described by Dubofsky (1992). In such tax-neutralized environment with the absence of microstructure impediments, the so-called ex-day stock price phenomenon for returns of capital should not exist, and the implied drop-off ratio should be equal to 1.

3 Institutional Framework

3.1 Distribution of Profits

Unlike the USA and the UK where dividends are paid on a quarterly and semi-annually basis respectively, dividends in Greece are paid on a yearly basis. Moreover, the Greek corporate Law 148/1967 (as modified by Laws 2753/1999, 2789/2000 and 3460/2006) clearly posits that at least 35% of net profits should be distributed to shareholders as minimum (first) dividend after deducting regular reserves. Minimum dividend distribution does not take place when 70% of the shareholders vote for no distribution at the annual shareholders' meeting. This mandatory dividend distribution is an institutional peculiarity that deprives much of the surprising component of the payout policy of the Greek listed firms.

Apart from the commonly known cash distribution in the form of dividends, an alternative conduit of cash disgorgement to shareholders

has been emerged in the last 15 years. In particular, in 2002, Iaso medical center was the first Greek listed company that distributed a cash payment in the form of return of capital to its shareholders. Return of capital is a special cash distribution that occurs when firms capitalize retained earnings of the current and previous years' profits and at the same time decide on decreasing equities by the amount of capitalized retained earnings. The decrease of equities is materialized through the disgorgement of cash to shareholders in the form of return of capital. Return of capital is neither a special nor a script dividend as documented by prior studies (e.g., Balachandran et al. 2008).

3.2 Dividends, Return of Capital, and Taxation

The tax treatment of dividends underwent dramatic changes that resulted in the upsurge of return of capital as the prevailing payout mechanism of the Greek listed firms. An important turning point was the introduction of Law 3842/2010 according to which dividends were taxed at 20% and were further burdened by additional tax applying to the investor's tax bracket as an individual which could bring the overall taxation to 45%. Corporate tax rates as well as tax on dividends have undergone significant changes through this turbulent period partly coinciding with the sovereign debt crisis and the pressure on the Greek government to raise additional corporate taxes while maintaining an attractive investor environment. Until 2008, dividends were not liable to tax other than the tax applying to corporate pretax profits. In 2009, dividend income was taxed by a further 10% (Law 3697/2008), and in 2011, this tax raised to 25% (Law 3943/2011), while individual further taxation still held for dividend recipients. In 2012, the new introduced legislation (Law 4038/2012) called for no further tax for dividend recipients, while the taxation for distributed profits remained at 45% (25% corporate tax plus an additional 20% for distributed profits). Distributed profits of 2013 were taxed at 35% (25% corporate tax plus an additional 10% for distributed profits). Since 2016, the corporate tax is 29%, and dividends are taxed by additional 15%.[4]

While the preceding analysis lends support to an ever changing dividend taxation environment, the return of capital has experienced a fairly stable tax treatment since it does neither entail the further tax included in distributed profits nor has it ever been taxed at the individual shareholder level given the tax bracket applying. For this reason, the return of capital has been considered an attractive cash distribution on the part of companies in a period that both corporate profits and dividend income were heavily taxed, while returns of capital were still tax free.

3.3 Market Microstructure Features

The ASE presents some market microstructure idiosyncrasies that are rarely observed in other capital markets. The ASE is an order-driven electronic market that allows multiple market makings for all stocks. Market making was initially introduced in June 2001 and was opted by a small number of listed firms.[5] Therefore, bid-ask spreads were available for a limited number of listed companies. The ASE has adopted the decimalized quotation of both stock prices and cash distributions,[6] and therefore, the price discreteness hypothesis of Bali and Hite (1998) could not find fertile ground in Greece. Moreover, tick size is €0.01 for stocks with closing prices between €0.01 and €2.99, €0.02 for stocks with closing prices between €3 and €55.99, and €0.05 for stocks with closing prices above €60.[7] However, since October 31, 2007, Greek stocks are experiencing a downward trend reaching rock-bottom levels in June of 2012 and in February of 2016 with a handful of stocks trading above of €60. Therefore, tick size cannot be considered as a significant microstructure impediment on ex-dividend days. Since 1996, commission costs have been deregulated and are freely set by brokerage firms. However, the Association of Securities Firms has set a maximum percentage of 1%. In fact, for transactions less than €8800, the commission does not exceed 0.5%, while for large transactions by institutional investors commission fees are between 0.10 and 0.20%. According to the Laws 2579/1998 and 3296/2004, a flat tax is imposed on every stock sale equal to 0.15%.

The tax is calculated on the basis of trade value of the stocks sold and is withheld upon the settlement of the transactions by the ASE. Since April 1, 2011, the flat tax is equal to 0.20% (Law 3943/2011). Finally, the automatic adjustment of stock prices on ex-dividend days ended on April 2, 2001. Therefore, the limit order adjustment mechanism as described by Dubofsky (1992) does not affect stock prices on ex-return of capital dates in Greece.

4 Research Design

4.1 Sample

The investigation of the ex-day stock price behavior of returns of capital covers the years between 2002 and 2015. Searching on the Web site of the ASE, I extracted the ex-days and the amount of the return of capital for all Greek listed firms. I identified 149 returns of capital which are the whole population. Both daily closing and opening prices for the listed firms distributing returns of capital were extracted from Bloomberg. In particular, stock price data were downloaded for the period commencing 250 days prior and ending 10 days subsequent to the ex-day. For the same period, I downloaded closing stock prices for the main stock index of the ASE. There were no missing data for the universe of returns of capital. Table 1 presents the distribution of returns of capital. In 2002, the first return of capital was distributed by Iaso medical center. Until 2008, 41 (27.5%) returns of capital had been distributed. The introduction of the flat tax rate in 2009 and the subsequent changes in the tax treatment of the dividend income provided the impetus to the Greek listed firms to start disgorging tax-free returns of capital to their shareholders. For the period 2009–2015, the number of returns of capital was 108 (72.5%) with the highest number of observations (23) occurring in 2011. In sum, the outbreak of the sovereign debt crisis that hit severely the Greek economy coincided with the introduction of taxes on dividends and the increase of return of capital distributions.

Table 1 Returns of capital distribution per year

Year	No.	%
2002	1	0.7
2003	2	1.34
2004	3	2.01
2005	12	8.05
2006	7	4.70
2007	8	5.37
2008	8	5.37
2009	10	6.71
2010	12	8.05
2011	23	15.44
2012	19	12.75
2013	16	10.74
2014	13	8.72
2015	15	10.07
Total	149	100

4.2 Methodology

To investigate the stock price behavior around the ex-return of capital dates, I follow the model proposed by Elton and Gruber (1970) according to which in a market without market frictions such as transaction costs and taxes, the stock price fall on the ex-dividend day (P_e) should be equal to the amount of the return of capital (RC), that is, $P_e - P_c = RC$, where P_c is the price on the cum-return of capital day. Dividing both sides by RC, I get the raw price ratio (RPR) which theoretical value should be equal to one:

$$RPR = \frac{P_c - P_e}{RC} = 1 \tag{3}$$

Following prior studies[8] I calculate RPR using closing prices both on cum- and ex-return of capital days ($RPR_{c\text{-}c}$). Furthermore, RPR is calculated using closing prices on cum-return of capital days and opening prices[9] on ex-return of capital days ($RPR_{c\text{-}o}$). Finally, RPR is computed using closing prices on both cum- and ex-return of capital days, but adjusting the latter for stock market movements. Kalay (1982), Michaely (1991) and Naranjo et al. (2000) well recognized that the closing price on ex-days is affected by the stock's normal daily return and attempted to

adjust for this drift. Following prior research, I address this problem by adjusting the ex-return of capital day closing price for the daily market return (R_m) as proxied by the main index of the ASE. This ratio is known as the market-adjusted price ratio (*MAPR*) and is computed as follows:

$$MAPR = \frac{P_c - [P_e/(1 + R_m)]}{RC} \tag{4}$$

Several researchers (i.e., Eades et al. 1984; Barclay 1987; Michaely 1991; Boyd and Jagannathan 1994; Bell and Jenkinson 2002) have asserted that the traditional ratio *RPR* suffers from heteroskedasticity and independence. Heteroskedasticity arises because the ratio is scaled by the dividend amount, which means that the weight given to changes in observations where dividends are low is excessive (Dasilas 2009). For that reason, I also compute the price change from the cum- to ex-return of capital day as scaled by the cum-return of capital day $\frac{P_c - P_e}{P_c}$ (or $\Delta P/P$). Following Milonas et al. (2006) and Dasilas (2009), I define this ratio as the raw price drop ratio (*RPDR*):

$$RPDR = \frac{P_c - P_e}{P_c} \tag{5}$$

Similar to RPR, RPDR is calculated in three ways. First, I calculate *RPDR* using (a) closing prices both on cum- and ex-return of capital days ($RPDR_{c\text{-}c}$), (b) closing prices on cum-return of capital days and opening prices on ex-return of capital days ($RPDR_{c\text{-}o}$), and (c) closing prices on both cum- and ex- return of capital days by adjusting the latter for stock market movements. This ratio is called the market-adjusted price drop ratio (*MAPDR*) and is calculated as follows:

$$MAPDR = \frac{P_c - [P_e/(1 + R_m)]}{P_c} \tag{6}$$

All raw price drop ratios have a theoretical value equal to the return of capital yield (*RCY*), which is computed as the return of capital per share divided by the stock price on the last cum- return of capital day.

$$RCY = \frac{RC}{P_c} \tag{7}$$

To examine the market reaction on and around ex-return of capital days, the standard event study methodology is employed. In particular, I estimate the stock price reaction for an event window of 20 days around the ex-dividend day ($t = 0$), that is, from day −10 to day +10. In particular, abnormal returns (*AR*) around ex-return of capital days are computed using the market model and the market-adjusted return model. Market model parameters are estimated by regressing (using OLS) the stock returns on the market return proxied by the main index of the ASE for the estimation period that ranges from $t-250$ to $t-11$, where $t = 0$ is the ex-return of capital date.

I compute average abnormal returns (*AAR*) as below:

$$AAR_t = \sum_{i=1}^{N} \frac{AR_{it}}{N} \tag{8}$$

where, N is the number of returns of capital.

I also calculate cumulative abnormal returns (*CARs*) as the sum of the abnormal returns for a specific period T:

$$CAR_{iT} = \sum_{t=1}^{T} AR_{it} \tag{9}$$

Cumulative abnormal returns are computed for the following event windows: (−10, −1), (+1, +10), (−5, −1), (+1, +5), (−1, +1), and (−1, 0).

Following prior studies,[10] we regress abnormal returns on ex-dividend days (AR_0) against a number of independent variables, including systematic risk (*BETA*), *RCY*, transaction costs (*TC*), and a dummy variable (Crisis) which takes the value of 1 for the period that covers Greece's sovereign debt crisis (2010–2015) and zero otherwise (2002–2009). The cross-sectional model is as follows:

$$AAR_{0,i} = a_0 + a_1 * BETA_i + a_2 * RCY_i + a_3 * TC_i + a_4 * Crisis_i + e_i \tag{10}$$

Systematic risk (*BETA*) is estimated 240 days before the event window (−250, −11), employing the market model. An arbitrageur is looking for an extra compensation (risk premium) for taking the risk to trade around ex-days, and therefore, a positive coefficient on systematic risk is expected. The *RCY* is measured as the ratio of the return of capital paid (*RC*) over the stock price on the cum-return of capital day (P_c). Lakonishok and Vermaelen (1986) and Karpoff and Walkling (1988) claimed that higher-yield stocks attract more short-term trading since the net benefits (after deducting transaction costs) of the dividend capture are larger. Therefore, a positive association between ex-day abnormal returns and *RCY* is expected. Following Karpoff and Walkling (1988), Naranjo et al. (2000), Dhaliwal and Zhen Li (2006), Yahyaee et al. (2008), Dasilas (2009) and Asimakopoulos et al. (2015), transactions costs are proxied by the inverse of the stock price on the last cum-return of capital day ($1/P_c$). These studies argue that a stock with high level of transaction costs prevent dividend (or return of capital) capture. Therefore, a positive relationship between ex-day abnormal returns and transaction costs is expected.

5 Empirical Findings

5.1 Drop-off Ratios

Panel A of Table 2 provides descriptive statistics for the entire population of returns of capital. The mean (median) return of capital per share is €0.413 (€0.125) much higher than the mean (median) dividend per share of €0.064 (€0.050) found by Dasilas (2009) for the period 2000–2004. The mean (median) *RCY* is 16.2% (7.1%) which is also higher than that found by Dasilas (2009) and Asimakopoulos et al. (2015). Panels B and C show descriptive statistics for the periods 2002–2009 and 2010–2015, respectively. The return of capital amount (€0.829 vs. €0.201) and yield (0.241% vs. 0.120%) in the period before the outbreak of the sovereign debt crisis period is remarkably higher compared to the crisis period, thus confirming the adverse consequences of

Table 2 Descriptive statistics

Panel A: Full period (2002–2015)					
$N = 149$	*RC*	*RC Yield*	P_c	P_{ex}	P_c–P_{ex}
Mean	0.413	0.162	4.205	4.246	−0.041
Median	0.125	0.071	2.473	2.550	−0.024
St. deviation	0.974	0.252	4.855	4.919	0.183
Max	10.920	1.338	25.393	26.058	0.776
Min	0.020	0.003	0.322	0.336	−1.105
Panel B: Before Greece's debt crisis period (2002–2009)					
$N = 50$	*RC*	*RC Yield*	P_c	P_{ex}	P_c–P_{ex}
Mean	0.829	0.241	5.586	5.602	−0.016
Median	0.500	0.164	3.443	3.407	0.015
St. deviation	1.561	0.304	5.587	5.655	0.233
Max	10.920	1.338	25.393	26.058	0.458
Min	0.020	0.005	0.620	0.600	−1.105
Panel C: After Greece's debt crisis period (2010–2015)					
$N = 99$	*RC*	*RC Yield*	P_c	P_{ex}	P_c–P_{ex}
Mean	0.201	0.120	3.486	3.540	−0.054
Median	0.100	0.054	2.026	2.043	−0.034
St. deviation	0.269	0.211	4.285	4.355	0.152
Max	1.460	1.238	21.221	21.840	0.776
Min	0.020	0.003	0.322	0.336	−0.619

Note RC is the return of capital per share. *RC yield* is the return of capital yield measured as the ratio of return of capital over the price on the cum-return of capital day P_c is the stock price on the cum-return of capital day and P_{ex} is the stock price on the ex-return of capital day. P_c–P_{ex} is the difference between the stock price on the cum-and ex-return of capital days

the debt crisis to shareholders. Finally, the mean closing stock price on the cum-return of capital date is €5.586 in the first period, whereas it is equal to €3.486 in the second period. Similar stock price drop between the two periods is observed when looking at the closing prices on the ex-return of capital dates (€5.602 vs. €3.540). Interestingly, the stock price difference between cum- and ex-dates is negative (€−0.016) in the period before debt crisis implying that shareholders buying stocks on cum-dates benefit more than those buying on ex-dates.

Table 3 presents both theoretical and observed mean and median values for $RPR_{c\text{-}c}$, $RPR_{c\text{-}o}$, *MARP*, $RPDR_{c\text{-}c}$, $RPDR_{c\text{-}o}$, and *MAPDR*. The differences of the means from their corresponding theoretical values are

Table 3 Ex-dividend day stock price behaviour

Panel A: Whole period (2002–2015)						
$N = 149$	Theoretical value	Mean	*t*-statistic	Theoretical value	Median	Wilcoxon signed rank *p*-value
$RPR_{c\text{-}c}$	1.000	−0.365***	−16.49	1.000	−0.143***	0.000
$RPR_{c\text{-}o}$	1.000	−0.406***	−9.59	1.000	−0.133***	0.000
MAPR	1.000	−0.356***	−14.08	1.000	−0.102***	0.000
$RPDR_{c\text{-}c}$	0.161	−0.012***	−48.54	0.068	−0.011***	0.000
$RPDR_{c\text{-}o}$	0.161	−0.012***	−39.91	0.068	−0.010***	0.000
MAPDR	0.161	−0.009***	−46.68	0.068	−0.013***	0.000
RC Yield		0.161			0.068	

Panel B: Before Greece's debt crisis period (2002–2009)						
$N = 50$	Theoretical value	Mean	*t*-statistic	Theoretical value	Median	Wilcoxon signed rank *p*-value
$RPR_{c\text{-}c}$	1.000	−0.175***	−8.32	1.000	0.013***	0.000
$RPR_{c\text{-}o}$	1.000	−0.241***	−3.70	1.000	−0.011***	0.000
MAPR	1.000	−0.114***	−8.56	1.000	0.023***	0.000
$RPDR_{c\text{-}c}$	0.241	0.001***	−43.14	0.164	0.003***	0.000
$RPDR_{c\text{-}o}$	0.241	−0.001***	−33.16	0.164	−0.001***	0.000
MAPDR	0.241	0.004***	−42.55	0.164	0.004***	0.000
RC Yield		0.241			0.164	

Panel C: After Greece's debt crisis period (2010–2015)						
$N = 99$	Theoretical value	Mean	*t*-statistic	Theoretical value	Median	Wilcoxon signed rank *p*-value
$RPR_{c\text{-}c}$	1.000	−0.461***	−14.44	1.000	−0.266***	0.000
$RPR_{c\text{-}o}$	1.000	−0.487***	−10.79	1.000	−0.230***	0.000
MAPR	1.000	−0.476***	−11.61	1.000	−0.291***	0.000
$RPDR_{c\text{-}c}$	0.120	−0.019***	−31.52	0.054	−0.017***	0.000
$RPDR_{c\text{-}o}$	0.120	−0.018***	−26.13	0.054	−0.016***	0.000
MAPDR	0.120	−0.016***	−29.99	0.054	−0.019***	0.000
RC Yield		0.120			0.054	

Notes $RPR_{c\text{-}c}$ is the raw price ratio using closing prices both on cum- and ex-return of capital days. $RPR_{c\text{-}o}$ is the raw price ratio using closing prices on cum-return of capital days and opening prices on ex-return of capital days. *MARP* is the market-adjusted price ratio using closing prices both on cum- and ex-return of capital days, but adjusting the latter for market movements. $RPDR_{c\text{-}c}$ is the raw price drop ratio using closing prices both on cum- and ex-return of capital days. $RPDR_{c\text{-}o}$ is the raw price drop ratio using closing prices on cum-return of capital days and opening prices on ex- return of capital days. *MAPDR* is the market-adjusted price drop ratio using closing prices both on cum- and ex-return of capital days, but adjusting the latter for market movements. *RC Yield* is the return of capital yield measured as the ratio of return of capital over the price on the cum-return of capital day. *** denotes statistically significant at the 0.01 level

tested using the *t*-test, and the differences of the medians from their theoretical values are tested employing the Wilcoxon signed rank test. Panel A reports the results for the whole period examined (2002–2015). The results document a mean (median) $RPR_{c\text{-}c}$ of −0.365 (−0.143), statistically different from the theoretical value of unity at the 1% level. The mean (median) $RPR_{c\text{-}o}$ is −0.406 (−0.133), statistically different from its theoretical value of unity at the 1% level. Similarly, the mean (median) *MARP* is −0.356 (−0.102), statistically different from unity at the 1% level. The above results imply that stock prices increase on ex-dates, and this is in sharp contrast with prior studies which display that stock prices drop on ex-dates.

$RPDR_{c\text{-}c}$, $RPDR_{c\text{-}o}$, and *MAPDR* also document a negative sign when are tested against their theoretical value (*RC yield*). In particular, the mean (median) $RPDR_{c\text{-}c}$, $RPDR_{c\text{-}o,}$ and *MAPDR* is −0.012 (−0.011), −0.012 (−0.010), and −0.009 (−0.013), respectively, all statistically different from the *RC yield*. Overall, the above results show that stock prices do not drop on ex-dates. This result is at odds with those found by Dasilas (2009) and Asimakopoulos et al. (2015) who documented positive but lower than unity drop-off ratios. This unexpected stock price behavior around ex-dates implies that the big winners of trading around these dates are those who buy on cum-dates and sell on ex-dates taking advantage of the price appreciation on ex-dates and the capture of the amount distributed.

Panel B of Table 3 reports the results from all drop-off ratios in the pre-debt crisis period. All *RPR*s display a negative value between −0.241 and −0.114, statistically different from unity. *RPDR*s are also statistically different from the RC yield (0.241%). Panel C presents the results from the ongoing debt crisis period. Again, all *RPR*s are statistically different from their theoretical value. Interestingly, the mean of *RPR*s is around −0.5 implying that stock prices increase even more on ex-dates compared to the pre-debt crisis period. This is more apparent when comparing the RC yields between the two periods. In fact, in the pre-debt crisis period, the mean RC yield is 0.241%, while that of the debt crisis period is 0.120%. In other words, shareholders trading around ex-return of capital dates reap more benefits in the debt crisis period. This can be attributed to selling pressures on the part of

investors during periods of financial turmoil and liquidity constraints. Under such harsh economic conditions, risk lover investors seem to be compensated by high amounts of distributed profits.

5.2 Stock Price Behavior

Table 4 reports the stock price behavior 20 days surrounding ex-return of capital days for the whole period under examination. For robustness reasons, the market reaction around ex-dates is gauged by the market model as well as by the market-adjusted return model. The results show an average abnormal return (*AAR*) that exceeds 12% as measured by the two return models, statistically significant at the 1% level. This market reaction is considerably higher than that found by Dasilas (2009) (0.968%) and Asimakopoulos et al. (2015) (2.257 and 1.179%) who investigated the ex-dividend day stock price behavior in Greece. Moreover, the stock price response on ex-return of capital dates is stronger compared to any other known studies around the world.

As already mentioned, returns of capital and capital gains were tax free for the whole period under examination. Moreover, the decimalized quotation of stock prices and distributed amounts, the relatively small tick size and the absence of an order adjustment model on ex-dates preclude the tax-effect hypothesis of Elton and Gruber (1970), the price discreteness hypothesis of Bali and Hite (1998), and the limit order adjustment mechanism of Dubofsky (1992). Even the argument of Frank and Jagannathan (1998) that bid-ask spreads are responsible for the ex-dividend stock price anomaly could not find empirical support in the current study due to the weak presence of market making for the majority of Greek stocks. The only hypothesis that seems to offer a possible explanation is the short-term trading hypothesis of Kalay (1982). I assess the impact of the short-term trading on ex-dividend day returns by analyzing the stock price behavior around the ex-return of capital dates. Kalay (1982) asserts that if short-term traders capture dividends, then ex-dividend day returns should not be confined solely to ex-dividend dates. Instead, they should be positive on the pre ex-dividend date and negative on the post-ex-dividend date to reflect the buying

Table 4 Abnormal returns around ex-return of capital days

$N = 149$	Market model		Market-adjusted	
Days	AAR%	*t*-statistic	AAR%	*t*-statistic
−10	0.117	0.53	0.488	1.38
−9	−0.178	−0.81	−0.470	−1.39
−8	0.141	0.64	0.061	0.27
−7	0.306	1.39	0.388	1.61
−6	0.634***	2.88	0.549***	2.57
−5	−0.007	−0.03	−0.081	−0.34
−4	−0.213	−0.97	0.126	0.49
−3	0.456**	2.07	0.803***	3.16
−2	0.320	1.45	0.638**	2.48
−1	0.397*	1.80	0.668*	1.72
0	12.390***	5.29	12.355***	8.81
1	−0.662***	−3.01	−0.594*	−1.67
2	−0.067	−0.31	0.090	0.35
3	0.383*	1.74	0.306	1.24
4	−0.263	−1.20	−0.029	−0.12
5	−0.146	−0.66	−0.112	−0.49
6	0.068	0.31	−0.102	−0.39
7	−0.069	−0.31	−0.169	−0.69
8	−0.493**	−2.24	−0.724***	−2.56
9	0.033	0.15	0.120	0.50
10	0.084	0.38	0.109	0.55
	CARs %	*t*-statistic	CARs %	*t*-statistic
CAR (−10 −1)	1.973***	2.84	3.170**	2.52
CAR (+1 +10)	−1.133	−1.63	−1.105	−1.08
CAR (−5 −1)	0.953*	1.94	2.154**	2.50
CAR (+1 +5)	−0.756	−1.54	−0.339	−0.46
CAR (−1 +1)	12.124***	7.40	12.429***	8.54
CAR (−1 0)	12.786***	7.71	13.022***	9.04

Notes This table shows the average abnormal returns (AARs) of returns of capital firms for 20 days around the ex-date ($t = 0$). It also shows the cumulative abnormal returns (CARs) for various event periods around the ex-return of capital date ($t = 0$). * indicates a significant difference from zero at the 10% level, ** indicates a significant difference from zero at the 5% level, and *** indicates a significant difference from zero at the 1% level

(selling) behavior in the pre- (post-) event period. Short-term traders are also expected to target high-yield and low transaction cost stocks.

Table 4 reports CARs across various event periods around ex-return of capital dates. In line with the predictions of the short-term trading hypothesis, I find evidence of statistically significant positive *CAR*s in

the pre-event periods [−10 to −1 and −5 to −1]. In particular, *CAR*s are 1.973% ($t = 2.84$) and 0.953% ($t = 1.94$) for periods [−10, −1], and [−5, −1], respectively based on the market model. On the other hand, *CAR*s in the post-event period for the event windows [+1 to +10 and +1 to +5] are negative, but statistically insignificant at any conventional level of significance. These results suggest that investors buy stocks in the pre-event period and sell them after the ex-day in order to capture the tax-free return of capital distribution.

Tables 5 and 6 present the market reaction around ex-return of capital days for the periods before (2002–2009) and after (2010–2015) the outbreak of Greece's sovereign debt crisis. The *AAR* on day 0 is 17.598% in the first period and 10.323% in the second period, both statistically significant at the 1% level. Unreported results demonstrate that the difference between the *AAR*s in the two periods is also statistically significant at the 1%. Moreover, the CAR of two days (−1, 0) is 19.740% in the first period, while it is equal to 11.147% in the period that the debt crisis inflicted Greece. Looking at all pre- and post-event windows, the greater market reaction in the pre-debt crisis period is considerably stronger vis-à-vis in the period of financial turbulence. In particular, the market reaction of two days (−1, 0) in the first period is almost twice as that in the second period. These results are in line with prior evidence documenting that under bull market conditions, capital gains are high, whereas in bear markets, capital gains are partly wiped out by the selling pressures and market downsizing.

5.3 Regression Results

Table 7 reports the regression results of the ex-return of capital day returns against the systematic risk (*BETA*), the *RCY*, *TC*, and a dummy variable (crisis) that takes the value of 1 for the period 2010–2015 (debt crisis) and zero otherwise. In the first model, the dependent variable is *AAR*s of day 0 as measured by the market model, and in the second model, *AAR*s of day 0 is based on the market-adjusted. The cross-sectional results from the first regression show that the coefficient of the systematic risk (*BETA*) is positive and statistically significant at the

Table 5 Abnormal returns around ex-return of capital days before Greece's debt crisis period (2002–2009)

$N = 50$	Market model		Market-adjusted	
Days	AAR%	*t*-statistic	AAR%	*t*-statistic
−10	−0.169	−0.50	0.054	0.09
−9	0.369	1.10	−0.128	−0.37
−8	0.051	0.15	−0.069	−0.21
−7	0.194	0.58	0.201	0.76
−6	0.165	0.49	0.392	1.46
−5	−0.115	−0.34	−0.324	−0.95
−4	0.244	0.73	0.207	0.65
−3	0.943***	2.81	1.296***	3.26
−2	0.771**	2.30	0.935**	2.17
−1	2.141***	6.39	−0.140	−0.40
0	17.598***	6.48	16.913***	5.65
1	−1.226***	−3.66	−0.702	−1.26
2	−0.558*	−1.66	−0.301	−0.68
3	−0.145	−0.43	0.129	0.34
4	−0.228	−0.68	0.272	0.86
5	−0.715**	−2.13	−0.193	−0.59
6	0.446	1.33	−0.107	−0.33
7	0.094	0.28	−0.048	−0.12
8	−0.406	−1.21	−0.494	−1.50
9	0.204	0.61	0.378	1.25
10	0.219	0.65	0.103	0.37
	CARs %	*t*-statistic	CARs %	*t*-statistic
CAR (−10 −1)	4.595***	4.33	2.423	1.50
CAR (+1 +10)	−2.315**	−2.18	−0.962	−0.90
CAR (−5 −1)	3.985***	5.31	1.973	1.27
CAR (+1 +5)	−2.873***	−3.83	−0.793	−0.93
CAR (−1 +1)	18.513***	4.76	16.070***	5.04
CAR (−1 0)	19.740***	5.10	16.772***	5.56

Notes This table shows the average abnormal returns (*AARs*) of returns of capital firms for 20 days around the ex-date ($t = 0$). It also shows the cumulative abnormal returns (CARs) cumulative abnormal returns for various event periods around the ex-return of capital date ($t = 0$). * indicates a significant difference from zero at the 10% level, ** indicates a significant difference from zero at the 5% level, and *** indicates a significant difference from zero at the 1% level

10% level in both models. This result is consistent with the notion that short-term trading is constrained by risk and, therefore, excess returns on ex-days should contain a risk premium (Asimakopoulos et al. 2015). Consistent with the expectations and prior evidence, the coefficient of

Table 6 Abnormal returns around ex-return of capital days after Greece's debt crisis period (2010–2015)

$N = 99$	Market model		Market-adjusted	
Days	AAR%	*t*-statistic	AAR%	*t*-statistic
−10	1.056***	3.15	0.719*	1.68
−9	−0.676**	−2.01	−0.645	−1.35
−8	0.181	0.54	0.129	0.43
−7	0.365	1.09	0.487	1.43
−6	0.909***	2.71	0.632**	2.15
−5	0.027	0.08	0.048	0.15
−4	−0.540	−1.61	0.083	0.23
−3	0.171	0.51	0.541*	1.67
−2	0.063	0.19	0.481	1.50
−1	0.630*	1.88	1.072*	1.94
0	10.323***	3.74	10.076***	7.02
1	−0.331	−0.99	−0.536	−1.17
2	0.160	0.48	0.292	0.91
3	0.607*	1.81	0.396	1.24
4	−0.366	−1.09	−0.185	−0.56
5	0.039	0.12	−0.071	−0.24
6	−0.248	−0.74	−0.100	−0.28
7	−0.103	−0.31	−0.231	−0.76
8	−0.531	−1.58	−0.846**	−2.13
9	−0.117	−0.35	−0.016	−0.05
10	−0.085	−0.25	0.112	0.42
	CARs %	*t*-statistic	CARs %	*t*-statistic
CAR (−10 −1)	2.186***	3.14	3.547**	2.37
CAR (+1 +10)	−0.973	−1.40	−1.184	−1.02
CAR (−5 −1)	0.351	0.71	2.225**	2.39
CAR (+1 +5)	0.110	0.22	−0.104	−0.12
CAR (−1 +1)	10.622***	6.75	10.611***	7.16
CAR (−1 0)	10.953***	6.95	11.147***	7.28

Notes This table shows the average abnormal returns (*AAR*s) of capital firms for 20 days around the ex-date ($t = 0$). It also shows the cumulative abnormal returns (*CAR*s) for various event periods around the ex-return of capital date ($t = 0$). * indicates a significant difference from zero at the 10% level, ** indicates a significant difference from zero at the 5% level, and *** indicates a significant difference from zero at the 1% level

the *RCY* is positive and statistically significant at the 5% level in both models. This finding lends support to the predictions of the short-term trading hypothesis. Kato and Loewenstein (1995), Michaely and Vila (1996), Wu and Hsu (1996), Naranjo et al. (2000), Dasilas (2009), and

Table 7 Regression analysis on ex-day abnormal returns

$AAR_{0,i} = a_0 + a_1 * BETA_i + a_2 * RCY_i + a_3 * TC_i + a_4 * Crisis_i + e_i$

	Market model AARs	Market-adjusted AARs
Intercept	0.091	0.098
	(2.24)***	(2.37)**
BETA	0.077	0.075
	(1.80)*	(1.74)*
RCY	0.117	0.121
	(1.99)**	(2.13)**
TC	−0.006	−0.006
	(−1.98)**	(−2.05)**
Crisis	−0.028	−0.031
	(−2.83)***	(−2.92)***
N	149	149
Adj-R^2	0.054	0.056
F-statistic	3.07***	3.19***

Notes In the first model, the dependent variable is *AAR*s of day 0 as measured by the market model, and in the second model, AARs of day 0 based on the market-adjusted. *BETA* is the systematic risk computed by the market model in the estimation period (–250, –11). *RCY* is the return of capital yield calculated as the ratio of return of capital per share over the stock price on the cum-return of capital day. *TC* is the transaction costs calculated as the reciprocal of stock price on the cum-return of capital day ($1/P_c$). Crisis is a dummy that takes the value of 1 for the period 2010–2015 (debt crisis) and zero otherwise (2002–2009). Standard error estimates are robust to heteroskedasticity (Huber/White). ***significant at 1% level, **significant at 5% level, and *significant at 10% level

Asimakopoulos et al. (2015) have found a positive coefficient for the dividend yield variable in their studies. Consistent with the short-term trading hypothesis, a positive association between ex-day returns and transaction costs is found. Similar result was reported by Karpoff and Walkling (1988, 1990) lending support to the assertion that the higher the level of transactions costs, the lower the trading around ex-days and consequently the higher the market reaction on ex-dates. Finally, the dummy variable that measures the effects of debt crisis on ex-day abnormal returns is negative and statistically significant at the 1% level. This result corroborates the stronger market reaction around ex-dates in the "quiet" period (2001–2009).

Overall, my results clearly show that ex-day returns are higher for higher-yield stocks with higher transaction costs. Moreover, my results

reveal that shareholders who invest their money in stocks with high systematic risk are compensated with higher profits around ex-dates. Finally, the adverse consequences of Greece's sovereign debt crisis were apparent for investors receiving profit distributions in the form of either a dividend or a return of capital as shown by the lower excess returns around ex-dates.

6 Conclusion

Since 2010, Greece is experiencing an unprecedented fiscal crisis and one of the most astonishing reversals of fortunes a country has ever experienced. Gross domestic product (GDP) has declined by 26% since 2008, and the economic prospects of the country have been in stalemate. During these harsh economic conditions, the majority of listed companies were encountering severe financial constraints such as limited access to external finance (i.e., bank lending and international financial markets), high cost of capital, diminishing investor interest, and remarkable operating losses. Altogether, they have a negative impact on the firm value which fell in rock-bottom levels in 2012 and in 2015. Many listed firms opted for delisting from the ASE in an attempt to avoid further market collapse. The outbreak of Greece's fiscal crisis partly coincided with significant structural reforms regarding the tax treatment of dividend income. Up to 2008, the common corporate practice was the distribution of a minimum dividend that was considered tax free for the recipients. However, in 2009, a flat tax rate of 10% on the dividend income was imposed. Since then, the tax rate on dividends underwent several changes that led Greek corporations to seek alternative ways of distributing tax-free profits to their shareholders. The conduit was the return of capital which has not been come across as profit distribution practice in other developing or developed markets.

The focus of the current study is the stock price behavior around ex-return of capital dates which is examined before and after the eruption of the fiscal crisis in Greece. The market idiosyncrasies prevailing the ASE (i.e., no taxes on return of capital, small tick size, lack of an adjustment model mechanism, and limited market making) neutralize

most of the explanations offered by prior researchers to interpret the ex-dividend day phenomenon. The results show a stock price appreciation on ex-dates which is at odds with prior findings from the stock price behavior around ex-dividend dates in Greece and across the world. This unexpected stock price reaction on ex-dates furnishes notable excess returns to those trading around these dates that exceed 12%. Excess returns are significantly higher in the period before debt crisis, though considerably high during the period of fiscal constraints. Finally, excess returns are concentrated on high-yielded stocks with high transaction costs and systematic risk. These results seem to corroborate most of the predictions of the short-term trading hypothesis as set by Kalay (1982).

The results of the current study bring new evidence to the field and provide some managerial implications to firms and investors. First of all, firms can "pump and dump" their stocks by distributing tax-free cash to shareholders even in days that a downward adjustment was expected. On the other hand, investors may enjoy considerable capital gains and yields when strategically trading around ex-return of capital days. Finally, the risk undertaken to invest in financially constrained periods is adequately compensated by high yields.

Notes

1. Yahyaee et al. (2008) found similar results using data from Oman where there were no taxes on dividends and capital gains.
2. On April 2, 2001, the ASE ended the automatic adjustment of the opening stock price on the ex-dividend day by the amount of dividend paid.
3. According to Asimakopoulos et al. (2015), until 2005, only 6 stocks had appointed market makers.
4. Since January 1, 2017, the tax rate on dividends is 10%.
5. According to Asimakopoulos et al. (2015, p. 3), until 2005, market making was applied only in 6 firms in their sample. More recent data from the Web site of the ASE (www.helex.gr) shows that market making was primarily offered to the 25 largest companies in terms of market capitalization.

6. Stock prices are quoted in three digits, while dividends and returns of capital are quoted in four digits.
7. See www.helex.gr.
8. See Milonas et al. (2006), Dasilas (2009) among others.
9. I use opening prices on ex-return of capital days in order to control for overnight market movements between the cum- and ex-return of capital day.
10. See Kato and Loewenstein (1995), Michaely and Vila (1996), Wu and Hsu (1996), Naranjo et al. (2000), Dhaliwal and Zhen Li (2006), Yahyaee et al. (2008), Dasilas (2009), and Asimakopoulos et al. (2015) among others.

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