



# Multiple clientele influence on ex-dividend day price performance

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## ABSTRACT

This paper considers a change in U.S. dividend taxation for qualified public utility stocks from 1982 through 1985. The change affects some of the highest dividend-yielding U.S. stocks and allows individuals to defer payment of income tax on dividends, ultimately paying tax at capital gains rates, and reduces individual income tax rates. This paper examines these stocks' ex-dividend day performance before, during, and after this tax-law change. Results provide evidence that multiple clienteles, not a single marginal investor, determine ex-dividend day pricing for these stocks.

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## 1. Introduction

Extensive literature examines the behavior of stock prices around the ex-dividend day (ex-day). Theories suggest ex-day price performance depends on trading by a single marginal investor who is motivated by tax-induced incentives to trade or hold the stock around the ex-day, or realizes arbitrage opportunities due to low transactions costs, or encounters discreteness in bid-ask spreads. Rantapuska (2008), Graham and Kumar (2006), and Graham, Michaely, and Roberts (2003) provide extensive lists of research explicating single marginal investor theories.

Alternatively, ex-day performance may instead aggregate the effects of trading by multiple investor groups holding or trading a stock around the ex-day. This theory holds that investor or market characteristics limit the ability of a single investor to determine marginal pricing. Consequently, ex-day performance reflects the combination of tax-induced preferences of several investor groups.

This paper examines how the Economic Recovery Tax Act of 1981 (ERTA) affects ex-day price performance of public utility stocks. To facilitate public utility capital formation, ERTA allows individual investors to exclude qualified public utility dividends from income taxation for the 4 years, 1982–1985, provided dividends are reinvested pursuant to a dividend reinvestment plan (Finnerty, 1989). Shares received are taxed upon sale at capital gains rates.

Literature considering ex-day price performance has not examined ERTA's reinvested-dividend exclusion. The high dividend yields of public utility stocks, and ERTA's differential effect on tax-induced trading by various investor groups with incentive to hold or trade these stocks,

provide a unique opportunity to examine how investors affect ex-day pricing. Also, most papers considering ex-day performance examine a broad sample of stocks over an extended time period (Chetty, Rosenberg, & Saez, 2007; Whitworth & Rao, 2005). The present paper is distinct in focusing on specific and limited, high dividend-yield stocks over a short time period.

This paper analyzes price change to dividend ( $\Delta P/D$ ) ratios and ex-day returns for ERTA-qualified public utility stocks and for a comparison sample of non-utility high dividend-yield stocks in order to determine the role of various investor groups in ex-day pricing before, during, and after ERTA. A significant change in  $\Delta P/D$  ratios and ex-day returns occurs when ERTA alters taxation of individual investors, while ratios and returns continue to reflect corporate preference for dividends. Results are inconsistent with theories relying on a single marginal investor to explain ex-day performance. Rather, ex-day pricing for qualified public utility stocks and non-utility high dividend-yield stocks aggregate the tax-induced preferences of both corporations and individual investors. Multiple investor groups determine ex-day price performance in this study.

## 2. Ex-day price performance, tax-law revision, and ERTA

Table 1 presents the principal theories in which a single marginal investor's trades determine ex-day price performance, and the corresponding  $\Delta P/D$  effects and citations to relevant literature. In the tax-clientele theory (Panel A), tax-induced trading by corporations or individuals determines ex-day pricing that depends on the marginal investor's ordinary income and capital gains tax rates. Under the transactions costs theory (Panel B), tax-neutral arbitrageurs with low transactions costs are the marginal investor and determine ex-day pricing; ex-day performance is independent of tax rates and instead reflects transaction cost bounds. A third theory (Panel C) relies

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**Table 1**  
Theories under which a single marginal investor determines ex-dividend day price performance.

Variables in this table are defined as follows:  $\Delta P$  is difference between the cum-day price and the expected ex-day price and  $\bar{P}$  is the average of the two.  $D$  is the amount of the dividend,  $k$  is the portion of the dividend a corporation may exclude from income, and  $\tau$  is a tax rate with subscripts c, o, and g indicating corporate, individual ordinary income, and individual capital gains rates.  $\alpha$  is the round trip transaction cost stated as a percentage.  $d$  is the largest discrete price change permitted by the market that is less than the dividend.

Investor that determines marginal pricing	$\Delta P/D$ formulas	Representative papers
Panel A. Tax-clientele theory - The marginal investor is the investor with the strongest tax-induced preferences. Price adjusts until that investor is indifferent between purchasing before or after the ex-day.		
Corporation	$\frac{\Delta P}{D} \leq 1 + \frac{k\tau_c}{1-\tau_c} - \frac{\alpha}{D}$	Elton and Gruber (1970) Eades, Hess, and Kim (1984) Lakonishok and Vermaelen (1986)
Individual investor	$\frac{\Delta P}{D} = \frac{1-\tau_o}{1-\tau_g}$	Bell and Jenkinson (2002) Zhang et al. (2008)
Panel B. Transaction costs theory - The marginal investor is the investor with lowest transaction costs.		
Arbitrageur	$1 - \frac{\alpha}{D} \leq \frac{\Delta P}{D} \leq 1 + \frac{\alpha}{D}$	Kalay (1982) Karpoff and Walking (1988) Koski (1996)
Panel C. Discrete pricing theory - The marginal investor is constrained by interaction of dividends with the market's minimum price movement.		
Arbitrageur	$\frac{\Delta P}{D} = \frac{d}{D}$	Bali and Hite (1998) Frank and Jagannathan (1998)

on discreteness in pricing; as in the transactions costs theory, arbitrageurs are the marginal investor, but pricing depends on discrete bid-ask spreads.

For a marginal investor to determine pricing, ex-day performance must reflect the trading incentives of that investor. If the marginal investor pays tax on dividends at a higher rate than on capital gains, the price drop on the ex-day must be less than the amount of the dividend paid (Elton & Gruber, 1970). When any tax-law change affects this investor, either marginal pricing changes to reflect the new tax treatment of the investor (Bell & Jenkinson, 2002), or a new investor becomes marginal and ex-day performance changes to reflect the new marginal investor's tax-induced preferences. The latter occurs when a tax-law revision reduces the original marginal investor's incentives to trade or hold the stock, or increases another investor's incentives enough that this new investor's trades now determine marginal pricing.

**Table 2**  
Change in  $\Delta P/D$  ratios implied by single marginal investor theories due to tax-law revision.

This table indicates the expected magnitude of the  $\Delta P/D$  ratio when different investor groups determine marginal ex-day price performance before and after a change in tax law. Each panel specifies the marginal investor prior to the tax-law change and identifies the magnitude of the  $\Delta P/D$  ratio set by that investor's trading. Lines within each panel indicate how the  $\Delta P/D$  ratio will change after a tax-law revision, depending on which investor group determines marginal prices after the change becomes effective.

Marginal investor after the tax-law revision	$\Delta P/D$ ratio after tax-law revision	Change in $\Delta P/D$ ratio when tax-law revisions become effective
Panel A. Corporation is marginal investor before tax-law revision: $\Delta P/D_{pre} > 1$ .		
Corporation	$\Delta P/D_{post} > 1$	No change
Individual investor	$\Delta P/D_{post} \leq 1$	Decrease to one or less
Arbitrageur	$\Delta P/D_{post} = 1$	Decrease to one
Panel B. Individual investor is marginal before tax-law revision: $\Delta P/D_{pre} \leq 1$ .		
Corporation	$\Delta P/D_{post} > 1$	Increase to greater than one
Individual investor	$\Delta P/D_{post} \leq 1$	Remain less than or equal to one
Arbitrageur	$\Delta P/D_{post} = 1$	No change or increase to one
Panel C. Arbitrageur is marginal investor before tax-law revision: $\Delta P/D_{pre} = 1$ .		
Corporation	$\Delta P/D_{post} > 1$	Increase to greater than one
Individual investor	$\Delta P/D_{post} \leq 1$	No change or decrease to less than one
Arbitrageur	$\Delta P/D_{post} = 1$	No change

Table 2 details the expected effect on  $\Delta P/D$  ratios if a single marginal investor determines ex-day pricing, and tax law changes. In Panel A, corporations are initially the marginal investor and  $\Delta P/D$  ratios exceed one. After a tax-law change, if corporations remain the marginal investor, the  $\Delta P/D$  ratio will reflect the new corporate tax rates but remain greater than one. When a change in either individual or corporate taxation causes individual investors to replace corporations as the marginal investor, the new  $\Delta P/D$  ratio will no longer exceed one: if dividend tax rates exceed capital gains rates, individual investors will prefer capital gains and  $\Delta P/D$  ratios will be less than one; if the rates on dividends and capital gains are equal, individual investors will be indifferent and  $\Delta P/D$  ratios will equal one. Similarly, if the tax-law change causes an arbitrageur to become the marginal investor, the new  $\Delta P/D$  ratio will equal one. Panel B (C) detail  $\Delta P/D$  ratios if individuals (arbitrageurs) are initially the marginal investors and tax-law changes.

Theories that rely on multiple investor groups to determine ex-day pricing also consider tax-induced preferences for dividends or capital gains. In addition, each investor group can be affected differently by non-tax factors, such as risk aversion (Michaely & Vila, 1995), ability to shift trades across time (Grundy, 1985), transactions costs differences (Bhardwaj & Brooks, 1999), and ability to recognize good managers or to add value by monitoring (Allen, Bernardo, & Welch, 2000).

When ex-day performance reflects multiple investors' incentives to hold or trade the stock, change in ex-day pricing due to tax-law revision aggregates the altered incentives of each investor group. The result may be indistinguishable from an ex-day pricing change caused instead by a single marginal investor. Multiple investor determination of ex-day pricing is evident only when the change in performance cannot be explained by any theory that relies on a single marginal investor.

The present study examines ERTA's effect on ex-day performance of qualified public utility stocks for evidence consistent with the single marginal investor or multiple investor theories. The public utility sample and ERTA provide a unique opportunity for such an analysis. The sample stocks are very sensitive to changes in tax-induced preferences due to high dividend yields. A change in dividend and capital gains tax rates has relatively greater effect on high dividend-yield stock returns. Also, trading costs for high dividend-yield stocks are lower relative to the expected price adjustment for dividends than for stocks with low dividend yields, making the arbitrageur's transactions costs bound narrowest in the former. The sample stocks are among the highest dividend-yielding stocks and are attractive both to corporations for dividend capture, and to arbitrageurs and low tax-bracket investors that are indifferent between dividends and capital gains. When dividend tax rates exceed capital gains rates, high tax-bracket individual investors have a strong disincentive to hold these stocks on the ex-day, or to acquire them immediately before; and a strong incentive to sell them immediately prior to the ex-day, or acquire them immediately thereafter.

ERTA temporarily changes the tax treatment of dividends paid by qualified public utilities to individual investors, dramatically altering high tax-bracket individuals' incentives to hold or trade these stocks around the ex-day. From January 1982 through December 1985, ERTA allows individual investors to exclude from income \$750 (\$1500 joint) of dividends received from qualified public utilities, provided the dividends are automatically reinvested in the company's dividend reinvestment plan. When stock purchased with reinvested dividends is ultimately sold, capital gains tax rates apply. This change affects high tax-bracket individuals' preferences most dramatically. The ratio of dividends net of tax to capital gains net of tax,  $(1 - \tau_o) / (1 - \tau_g)$ , normally lower for high tax-bracket taxpayers than any other investor group, equals one during the ERTA period. ERTA eliminates high tax-bracket individuals' disincentive to own these stocks on the ex-day, but does not create a preference for dividends.

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