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# Are Dividends and Share Buybacks Substitutes in a Tax-Free Environment? Evidence from the GCC.

## Abstract

**Purpose:** We test whether dividends and share buybacks are substitutes in a tax-free environment. Firms in recent decades substitute buybacks for dividends due to the low tax rates on capital gains. Investors in the Gulf Cooperation Council (GCC) countries do not pay taxes on cash dividends, making the substitution between dividends and buybacks less relevant. **Study design/methodology/ approach:** We use an empirical approach using the Lintner (1956) model to estimate future dividend surprises, and subsequently run cross-sectional regressions using Fama-Macbeth (1973) to compare predicted dividend surprises with actual dividends paid and share repurchases. **Sample and data:** We collect data for firms headquartered in GCC countries from the World scope and Data Stream databases, resulting in 8,729 firm-year observations spanning from 1993 to 2019. **Results:** We find that the dividend changes are positively related to share buyback yield. Firms that have positive (negative) dividend surprises are associated with more (less) repurchase activity. Our results suggest that dividends and repurchases are complements rather than substitutes in a tax-free environment. It supports the findings that taxes play an important consideration when firms decide their payout policy. **Originality/value:** This is the first paper that studies this substitution effect in payout policy in a tax-free environment. **Research limitations/ implications:** Limitations include lack of data prior to 2003 and other data availability limitations. Implications include how firms may decide their optimal payout policy and how repurchase regulations are set in the GCC

***Keywords***: Payout Policy, Repurchases, Dividends, Substitution, GCC.

**JEL classification:** G15, G35

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## Introduction

Firms are increasingly engaged in share repurchases to pay investors. Fama and French (2001) find that cash dividends are disappearing in recent decades in the US. Grullon and Michaely (2002, 2004) argue that repurchases are an attractive substitute to cash dividends and that firms are realizing their advantages, suggesting that repurchases are attractive because of their tax advantages over cash dividends. One explanation for the popularity of repurchases in recent decades is the fact that firms are realizing that their investor base pays a higher tax bill on cash dividends, whereas repurchases are not subject to such a tax burden and investors typically pay capital gains tax which is usually less than the tax on cash dividends.

We test whether dividends and repurchases are substitutes in a tax-free environment. Specifically, we test the propensity to pay cash dividends or to repurchase shares in the Gulf Cooperation Council (GCC) countries(1). GCC countries have no tax system and that neither individuals nor corporations pay taxes(2). This paper aims at understanding corporate payout policy and how the tax system of its legal environment affects such a decision.

Cash dividends and share repurchases are seen as substitutes when managers decide their payout policy. Kulchania (2013); Jiag *et al.* (2013); Grullon and Michaely (2002, 2004) find out that managers use funds that would have been paid to investors in the form of cash dividends to repurchase shares. This substitution between dividends and repurchases persists not only in the US, but also all over the world. For example, Jacob and Jacob (2013); Andriosopoulos and Hoque (2013); Eije and Megginson (2008) find evidence of the substitution hypothesis around the world. Moreover, Boqoc and Pirtea (2014); Reddy and Rath (2005) find out that the substitution hypothesis also persists in emerging markets.

Grullon *et al.* (2005); Fama and French (2001) argue that the declining propensity to pay dividends is associated with the higher marginal tax rate on dividends relevant to repurchases. Firms consider the tax rates on dividends and repurchases before deciding their payout policy. Capital gain taxes are lower than dividend taxes in most countries. Thus, substituting dividends with repurchases would definitely benefit the firm's investor base. For example, Jacob and Jacob

(1) Saudi Arabia, United Arab Emirates, Kuwait, Qatar, Bahrain, and Oman.

(2) In recent years, some GCC countries implemented some forms of tax systems but are irrelevant for the scope of this paper. For example, some countries implemented VAT tax systems. These systems are irrelevant to firm's payout policy.

(2013); Blouin *et al.* (2011) find out that higher taxes on dividends correspond closely to the firm's decision to repurchase shares.

The substitution between dividends and repurchases exists primarily because of the tax advantages of capital gains relevant to dividends. Thus, if those tax advantages cease to exist, we expect the substitution hypothesis to be less relevant. We use firms incorporated in GCC countries as an interesting sample to test whether the substitution hypothesis exists in a tax-free environment. Specifically, we test whether repurchases and dividends are substitutes or complements if taxes are no longer a consideration for firms when deciding their payout policy.

Contrary to the substitution hypothesis, we find out that dividends and repurchases are complements rather than substitutes for firms in GCC countries. We find that increases (decreases) in dividends are associated with increases (decreases) in repurchase activities. Thus, firms in GCC countries *do not* use funds that would have been used to pay for dividends to repurchase shares as argued by Grullon and Michaely (2002). This result suggests that taxes on dividends versus capital gains is a first-order determinant when firms decide whether to substitute dividends with repurchases.

This paper contributes to the existing literature on the substitution between cash dividends and repurchases. The existing evidence suggests that cash dividends and repurchases are substitutes due to the tax advantages and flexibility of repurchases. However, we show that cash dividends and repurchases are complements in the absence of any tax effects. This paper is the first of its kind to test the substitution between cash dividends and repurchases in a tax-free environment, and we find out a repurchase activity is positively related to dividend surprises, suggesting that they are complements. We show that taxes are the first-order determinant when firms decide the form of their payout policy. This finding is robust to different dividend-preforecast periods, as well as different regression methods. Section 2 reviews the previous literature on the subject at hand. Section 3 discusses our hypothesis development. Section 4 covers the data and the methodology. Section 5 includes the summary statistics. Section 6 shows the results. Section 7 deals with the robustness tests. Section 8 is the conclusion of the study.

## Literature Review

One of the major assumptions behind the Modigliani and Miller (1961) irrelevance theory of dividends is the absence of taxes. However, the literature

cannot ignore the tax effect on payout policies. A substantial body of literature argues that taxes are the first-order determinant of a firm's payout policies. Lie and Lie (1999); Rozycki (1997) find that personal taxation is the first-order determinant for firms to choose between repurchases and cash dividends. Jacob and Jacob (2013) find out that the tax effects on dividends and repurchases are substantial. They find out that increases (decreases) in tax rates on dividends correspond to decrease (increase) in dividend payments. Moreover, they find out increases in capital gains taxes correspond to less repurchase activities. Blouin *et al.* (2011); Brav *et al.* (2008) find that decreases in tax rates increase the propensity to pay dividends. Not only do taxes on dividends and repurchases affect the payout decision, but also other forms of taxes. For example, Nessa (2017) find out that repatriation tax affects cash dividends but not repurchases.

Grullon and Michaely (2002, 2004) argue that cash dividends and share repurchases are substitutes when making a payout policy decision. Specifically, managers might prefer repurchases because of their flexibility in deciding the payout policy (Booth and Zhou, 2017). According to Lintner (1956), dividends are sticky and managers are reluctant to increase/decrease them unless they are sustainable in the long run. Therefore, Grullon and Michaely (2002, 2004) argue that firms substitute share repurchases for increasing cash dividends. They find that funds that would have been used to increase dividends are used to repurchase the firm's stock.

Since the Grullon and Michaely (2002, 2004) "substitution hypothesis", several bodies of literature support their findings and extend them to other corporate decisions. Skinner (2008) finds out that repurchases are the dominant form of payout, and that firms seldom pay only cash dividends. Almeida *et al.* (2016) find out that firms are more likely to repurchase shares to meet analysts' forecasts about earnings. Bonaime *et al.* (2016); lyer *et al.* (2016) find out that repurchases are more flexible than cash dividends, which makes repurchases a good substitute for cash dividends. Floyd *et al.* (2015) finds out that cash dividends increase when the declining propensity to pay reverses, while repurchases increase payouts to historical levels.

Bonaime *et al.* (2020) examine repurchase plans and find out that firms with alternative financial stability are more likely to repurchase shares. The firms that announce repurchase plans have positive market reactions and have stronger substitution with cash dividends. Autore *et al.* (2019) finds out that the presence of

active investors increases the likelihood of repurchases which has a direct effect on the firm's governance.

The share-buyback activity is documented internationally as well. Andriosopoulos and Hoque (2013); Eije and Megginson (2008) find out a recent surge in share repurchases in the European Union as opposed to cash dividends. Wesson *et al.* (2018) finds out there is strong evidence on the substitution between dividends and repurchases in South Africa. Alzahrani and Lasfer (2012) examine 24 OECD countries and find out that cash dividend and repurchases substitution is correlated with the degree of investor protection and taxation.

Baker and Ridder (2018) do not find substitution between dividends and repurchases among Swedish firms.

Boqoc and Pirtea (2014); Reddy and Rath (2005) find out that the substitution hypothesis also persists in emerging markets.

The international evidence on the tax implication on the substitution between dividends and repurchases is limited. Jacob and Jacob (2013) argue that most studies on the tax effects on repurchases are country focused studies. Oswald and Young (2004); Rau and Vermaelen (2002) find that taxes are a major factor in a firm's payout policies in the UK. Lee *et al.* (2006); Brown and Efthim (2005) find similar results for Australia and Taiwan respectively.

## Hypotheses Development

Cash dividends have been vanishing in recent years in the developed world. Instead, firms have been using repurchases as a means of distributing cash to shareholders. One explanation for the popularity of repurchases is their tax advantage to shareholders. Capital gains are generally taxed at a lower rate than cash dividends, giving an incentive for firms to cater dividends to their investors' needs. Indeed, Baker and Wurgler (2004a) argue that firms cater dividends to their investor base. Jiang *et al.* (2013) extend the catering framework to repurchases and find out that firms cater repurchases to investors.

Another reason for the popularity of repurchases is their flexibility (Bonaime *et al.*, 2020). Firms are reluctant to change their cash dividends plans and use repurchases as means of distributing extraordinary items to shareholders. Indeed, the market reaction to dividend surprises is significant (Baker *et al.*, 2016). Thus, repurchases give firms the needed flexibility once they decide their payout policy.

For those reasons, Grullon and Michaely (2002, 2004) argue that cash dividends and repurchases are substitutes. They find out that firms repurchase shares using funds that otherwise would have been used to increase dividends. They find this to be true for dividend paying firms as well as first-time dividend paying firms. This finding suggests that repurchases are substitutes for cash dividends rather than complements when deciding the payout policy. Grullon and Michaely (2002, 2004) attribute their findings to the tax advantage of repurchases as well as their flexibility. A growing body of literature supports this substitution hypothesis (Almeida *et al.*, 2016; Bonaime *et al.*, 2016; lyer *et al.*, 2016; Skinner, 2008).

We extend the analysis of the substitution hypothesis by examining the unique nature of firms headquartered in the GCC countries. GCC countries have zero tax on cash dividends and capital gains, making them a good candidate to test how firms headquartered in the region decide their payout policy. As discussed earlier, tax considerations are the first-order determinant of payout policies and the popularity of repurchases is due in part to their tax advantage. Since GCC countries do not tax dividends nor repurchases, the popularity of repurchases might be of a lesser effect.

The Lintner (1956) model assumes that cash dividends are sticky and firms are reluctant to alter their dividend plans due to severe market reaction. Repurchases are flexible and there are no documented market reactions to changes in repurchase plans, making repurchases less sticky than dividends. Thus, the substitution between cash dividends and repurchases could possibly be due to the flexibility of repurchases, rather than their tax advantage. Examining this substitution hypothesis for firms headquartered in GCC countries can shed light on answering this question.

To answer this question, we use the Lintner (1956) model in order to disentangle the flexibility effect of repurchases in firms headquartered in GCC countries. Specifically, since dividends are sticky, we look at expected dividends versus actual dividends to see if there are any dividend surprises. We then compare these surprises with the actual repurchase yield. Grullon and Michaely (2002) find a negative association between dividend surprises and the repurchase yield for the US firms, suggesting that funds, that would have been used to increase dividends, have been used instead to repurchase shares. Hence, they conclude that dividends and repurchases are substitutes.

For firms headquartered in GCC countries, although taxes on cash dividends are zero, firms might be reluctant to increase or decrease their dividends in an unsustainable way. Therefore, firms might use funds that would have been used to increase dividends to repurchase their own shares. This conclusion suggests that the flexibility effect of repurchases overrides the tax effect on both dividends and repurchases. Subsequently, as in the US and in the developed economies, this argument suggests that cash dividends and repurchases are substitutes for firms in the GCC region.

***H1:*** *The substitution hypothesis - Firms headquartered in GCC countries substitute between cash dividends and repurchases when deciding their payout policy.*

The substitution hypothesis indicates that unexpected dividends are negatively correlated with the repurchase yield of a firm's stock; firms use funds to repurchase shares instead of increasing dividends.

The substitution hypothesis result: The repurchase yield is negatively associated with dividend surprises for firms headquartered in GCC countries.

The second argument can assume that the tax effect of both dividends and repurchases overcomes the flexibility effect of repurchases. As discussed earlier, the popularity of repurchases is partly due to the lower tax rate on capital gains compared to dividends. Hence, firms in the developed economies use repurchases as a substitute to cash dividends. This effect might not be true for firms headquartered in the GCC region since tax rates on capital gains and dividends are zero. If this tax effect is the first-order determinant when deciding a payout policy, we would expect repurchases and dividends to be complements rather than substitutes.

***H2:*** *The complementary hypothesis - Firms headquartered in GCC countries use cash dividends and repurchases complementarily when deciding their payout policy.*

Therefore, if the complementary hypothesis is valid, we will expect that dividend surprises are positively associated with the repurchase yield on a firm's stock.

The complementary hypothesis result: The repurchase yield is positively associated with dividend surprises for firms headquartered in GCC countries.

## Data and Methodology

We collect data for firms headquartered in GCC countries from the Worldscope and Datastream databases. The dataset includes listed and delisted firms. The period of time for our dataset varies for each country as Worldscope started collecting data for GCC firms in the 1990s. Our earliest observation is in 1993 and latest is in 2019. All in all, we have 8729 firm-year observations spanning from 1993 to 2019.

For the purpose of this study, our main variable of interest is the repurchase yield variable. Worldscope collects data for firms that engage in stock repurchasing activities. Specifically, Worldscope has a variable called "Repurchase/retirement of common" which represents cash outflow on the repurchases of common stock (increase in treasury stock) or the reduction of capital[3].

To investigate whether a firm treats dividends and repurchases as substitutes, we use the Lintner (1956) model to find out how a firm determines its payout policy. According to Lintner (1956), cash dividends and firms determine their dividends based on their last dividend payment and their earnings.

Specifically, a firm's dividend is a function of its target payout ratio and the speed of adjustment toward current dividends.

$$\Delta D_{i,t} = \alpha_i + c_i(D_{i,t} - D_{i,t-1}) + e_{i,t} \tag{1}$$

where $\alpha_i$ is constant, $c_i$ is the speed of adjustment for firm $i$, $\Delta D_{i,t}$ is the change in dividends from time $t$ to $t-1$, and $Di, t$ is the dividend at time $t$. According to Lintner (1956), the firm's dividends are a function of its target payout ratio. So $D_{i,t}$, can be written as:

$$D_{i,t} = r_i E_{i,t} \tag{2}$$

where $r_i$ is the firm's target payout ratio and $E_i, t$ is the firm's earnings at time $t$. Substitution of (2) into (1) yields:

$$D_{i,t} = \alpha_i + \beta_{1,i} E_{i,t} + \beta_{2,i} D_{i,t-1} + e_{i,t} \tag{3}$$

where $\beta_{1,i} = c_i r_i$ and $\beta_{2,i} = (1 - c_i)$.

(3) Also, as in Fama and French (2001), we use changes in treasury stock as a repurchase variable. We get similar results.

Based on this model, we calculate a firm's expected dividend and compare it to its actual dividends. We can see whether a firm deviates from its past dividend behavior by looking at the dividend forecast error (actual - expected). If dividends and repurchases are substitutes (complements), we expect to see a negative (positive) relationship between the dividend forecast error and repurchase activity.

We use the Grullon and Michaely (2002) model to determine the relationship between the dividend forecast error and repurchase activity. Specifically, for each firm, we define the forecast error as:

$$Error_{i,t} = [\Delta D_{i,t} - (\alpha_i + \beta_{1,i} E_{i,t} + \beta_{2,i} D_{i,t-1})]/MV_{i,t-1} \quad (4)$$

where $\beta_{1,i}$ and $\beta_{2,i}$ are the parameter estimates of the Lintner model and $MV_{i,t-1}$ is the market value of firm $i$ at time $t-1$. As in Grullon and Michaely (2002) we divide by the market value of the firm to reduce the effect of heteroskedasticity and to directly compare the dividend forecast error and the repurchase yield.

To examine the substitution and complimentary hypotheses, we regress the dividend forecast $Error_{i,t}$ on the repurchase yield $RYield_{i,t}$ and other firm-specific factors. The repurchase yield is the firm's $i$'s expenditure on its own stock repurchases scaled by the market value of the firm at time $t-1$.

$$Error_{i,t} = \alpha_i + \beta_1 RYield_{i,t} + \sum_{n=2}^{N} \beta_n f_{n,i,t} + e_{i,t} \quad (5)$$

The substitution hypothesis predicts that $\beta_1$ is negative. That is, firms use funds to repurchase shares that would have been used to increase dividends. The complementary hypothesis predicts that $\beta_1$ is positive and that increases in dividends go hand in hand with repurchase activities.

## Summary Statistics

Table 1 presents a picture of dividend and repurchase activity in the GCC over a period of time. As is shown in the table, dividends tend to be paid out regularly throughout the period, and payout via repurchases seems to be done at a lower rate. Just over 75% of firms with repurchase data available actually do repurchase. Of main importance to our study is the share repurchase variable and buyback. This is measured as the increase of a firm's treasury stock, following Fama and French (2001). This variable is constructed in this manner partially because of data limitations, but it is also supported by local GCC definitions of share repurchases. The Kuwaiti Capital Markets Authority, for example, defines share repurchases as "a company's shares which the issuing company re-purchases or buys back or

otherwise makes use of."[4] Approval of shareholders in the general assembly is required to initiate those repurchase programs.

**Table 1**
**Aggregate Dividend and Repurchase Activity in the GCC.**

We determine the payout policy of the firm by observing the firm's activity from 1996 - 2019. The sample consists of all 8,729 firm-year observations from the Worldscope database that have data on GCC companies that report dividends and/or buybacks. "*Number of firms*" is the number of firms in the dataset for that calendar year; "*Firms that pay dividends*" is the number of firms that pay dividends during that calendar year; "*Firms that do not pay dividends*" is the number of remaining firms during that year that do not pay any dividends during that calendar year; "*Firms with Buyback activity*" is the number of firms that have a change in the treasury shares reported during the calendar year; "*Buyback > 0*" is the number of companies that report an increase in treasury shares indicating buyback activity during the calendar year, as per the buyback definition; "*Buyback < = 0*" is the number of companies that report a negative change in treasury shares during the calendar year.

| Year | Number of firms | Firms that pay dividends | Firms that do not pay dividends | Firms with Buyback activity | Buyback > 0 | Buyback < = 0 |
|---|---|---|---|---|---|---|
| 1996 | 5 | 4 | 1 | 0 | 0 | 0 |
| 1997 | 19 | 16 | 3 | 1 | 0 | 1 |
| 1998 | 43 | 27 | 16 | 6 | 2 | 4 |
| 1999 | 58 | 46 | 12 | 9 | 8 | 1 |
| 2000 | 136 | 90 | 46 | 22 | 11 | 11 |
| 2001 | 162 | 107 | 55 | 24 | 17 | 7 |
| 2002 | 205 | 145 | 60 | 28 | 19 | 9 |
| 2003 | 294 | 207 | 87 | 36 | 24 | 12 |
| 2004 | 326 | 242 | 84 | 39 | 31 | 8 |
| 2005 | 341 | 245 | 96 | 48 | 42 | 6 |
| 2006 | 410 | 305 | 105 | 60 | 56 | 4 |
| 2007 | 413 | 340 | 73 | 69 | 50 | 19 |
| 2008 | 429 | 269 | 160 | 78 | 71 | 7 |
| 2009 | 497 | 297 | 200 | 73 | 58 | 15 |
| 2010 | 550 | 316 | 234 | 70 | 44 | 26 |
| 2011 | 534 | 317 | 217 | 64 | 52 | 12 |

(4) Law No. 7 of 2010 Regarding the Establishment of the Capital Markets Authority and Regulating Securities Activities and its Amendments.

**Cont. Table 1**
**Aggregate Dividend and Repurchase Activity in the GCC.**

| Year | Number of firms | Firms that pay dividends | Firms that do not pay dividends | Firms with Buyback activity | Buyback > 0 | Buyback < = 0 |
|---|---|---|---|---|---|---|
| 2012 | 522 | 336 | 186 | 63 | 43 | 20 |
| 2013 | 540 | 357 | 183 | 55 | 39 | 16 |
| 2014 | 550 | 373 | 177 | 48 | 36 | 12 |
| 2015 | 555 | 369 | 186 | 55 | 42 | 13 |
| 2016 | 562 | 376 | 186 | 59 | 48 | 11 |
| 2017 | 580 | 372 | 208 | 61 | 38 | 23 |
| 2018 | 587 | 342 | 245 | 50 | 42 | 8 |
| 2019 | 411 | 308 | 103 | 46 | 35 | 11 |
| Total | 8729 | 5806 | 2923 | 1064 | 808 | 256 |

Table 2 shows a cross sectional picture of dividends and repurchase activity across the GCC. Broken down by country, we see clearly that both cash dividends and repurchases are practiced and done so regularly. We also see that dividends are the preferred type of payout, and repurchases are secondary in nature since they appear to be much less prevalent than dividends. Repurchases are not a direct form of payout since it improves the firm's EPS, which leads to capital gains.

**Table 2**
**Cross-Section on Dividends and Repurchase Activity within GCC Countries**

The table presents cross-sectional observations on dividend and repurchase activity across the different GCC countries over the entire period. We determine the payout policy of the firm by observing the firm's activity from 1996 to 2019, consisting of 8,729 firm-year observations that report dividend and/or buyback data. "*N*" is the number of observations with the relevant available data in each country; "*DIV > 0*" is the number of observations of dividends paid in each country; "*DIV = 0*" is the number of remaining observations that does not not pay any dividends in each country; "*Buyback > 0*" is the number of observations that has an increase in the treasury shares reported in each country indicating buyback activity as per the buyback definition; "*Buyback < = 0*" is the number of observations that reports a negative or no change in treasury shares in each country. "*Div and Buyback activity*" is the number of observations with both dividend data and change in treasury shares data in each country; "*Div = 0 and Buyback = 0*" is the number of observations that indicates zero dividends and has no change in treasury shares in each country.

"*Div > 0 and Buyback = 0*" is the number of observations with dividends paid and no change in treasury shares in each country, indicating only dividends were paid;

"*Div = 0 and Buyback > 0*" is the number of observations with zero dividends and an increase in treasury shares reported in each country, indicating a share repurchase only. "*Div > 0 and Buyback > 0*" is the number of observations with both dividend-paid data and an increase in treasury shares reported in each country, indicating both dividend and repurchase activity.

| Country | N | DIV > 0 | DIV = 0 | Buyback > 0 | Buy-back < = 0 | Div and Buyback activity | Div = 0 and Buy-back = 0 | Div > 0 and Buy-back = 0 | Div = 0 Buy-back > 0 | Div > 0 and Buy-back > 0 |
|---|---|---|---|---|---|---|---|---|---|---|
| Bahrain | 644 | 473 | 171 | 77 | 25 | 90 | 11 | 13 | 30 | 36 |
| Kuwait | 2358 | 1254 | 1104 | 648 | 190 | 744 | 66 | 100 | 190 | 388 |
| Oman | 1601 | 1129 | 472 | 15 | 10 | 19 | 6 | 2 | 6 | 5 |
| Qatar | 645 | 544 | 101 | 1 | 0 | 1 | 0 | 0 | 0 | 1 |
| Saudi Arabia | 1873 | 1314 | 559 | 33 | 13 | 39 | 2 | 7 | 6 | 24 |
| UAE | 1608 | 1092 | 516 | 34 | 18 | 49 | 6 | 9 | 9 | 25 |
| Total | 8729 | 5806 | 2923 | 808 | 256 | 942 | 91 | 131 | 241 | 479 |

Table 3 shows the breakdown of dividend and repurchase activity by industry, and as shown in the previous tables we see that both paying cash dividend and repurchases are practiced regularly across all industries. The table shows that more than 20% of Real Estate firms have dividend and/or repurchase activities within their industry, followed by financials, communication services and industrials. The table also shows that dividends are once again the preferred payout type by their dominance, in terms of their frequency, when compared to repurchases.

**Table 3**
**Cross-Section on Dividends and Repurchase Activity by Industry**

The table presents cross-sectional observations on dividend and repurchase activity across the different industries over the entire period. We determine the payout policy of the firm by observing the firm's activity from 1996 - 2019, consisting of 8,729 firm-year observations that report dividend and/or buyback data.

Variable definitions can be found in Table 2.

| Industry | N | DIV > 0 | DIV = 0 | Buyback > 0 | Buy-back < = 0 | Div and Buyback activity | Div = 0 and Buy-back = 0 | Div > 0 and Buy-back = 0 | Div = 0 Buy-back > 0 | Div > 0 and Buy-back > 0 |
|---|---|---|---|---|---|---|---|---|---|---|
| Commu-nications | 288 | 224 | 64 | 30 | 24 | 6 | 29 | 0 | 6 | 2 |
| Consumer Disc. | 554 | 383 | 171 | 47 | 35 | 12 | 41 | 3 | 6 | 20 |
| Consumer Staples | 653 | 440 | 213 | 33 | 26 | 7 | 31 | 2 | 4 | 6 |

**Cont. Table 3**
**Cross-Section on Dividends and Repurchase Activity by Industry**

| Industry | N | DIV > 0 | DIV = 0 | Buyback > 0 | Buy-back < = 0 | Div and Buyback activity | Div = 0 and Buy-back = 0 | Div > 0 and Buy-back = 0 | Div = 0 Buy-back > 0 | Div > 0 and Buy-back > 0 |
|---|---|---|---|---|---|---|---|---|---|---|
| Energy | 338 | 248 | 90 | 25 | 18 | 7 | 19 | 0 | 5 | 2 |
| Finan-cials | 3232 | 2076 | 1156 | 498 | 373 | 125 | 457 | 51 | 64 | 116 |
| Health-care | 163 | 114 | 49 | 1 | 1 | 0 | 1 | 0 | 0 | - |
| Indus-trials | 1030 | 708 | 322 | 104 | 77 | 27 | 88 | 9 | 12 | 25 |
| IT | 35 | 29 | 6 | - | - | 0 | | 0 | 0 | - |
| Materials | 1035 | 821 | 214 | 78 | 62 | 16 | 70 | 4 | 11 | 7 |
| Real Estate | 890 | 460 | 430 | 238 | 188 | 50 | 197 | 19 | 20 | 62 |
| Utilities | 171 | 152 | 19 | 4 | 2 | 2 | 4 | 0 | 2 | - |
| No Ind. Data | 340 | 151 | 189 | 6 | 2 | 4 | 5 | 3 | 1 | 1 |
| Total | 8729 | 5806 | 2923 | 808 | 256 | 942 | 91 | 131 | 241 | 479 |

Firm characteristics by payout policy can be found in Table 4. We categorize the firms by payout policy per year and assess their respective averages and median firm characteristics. Table 4 shows that nearly all firms in our dataset pay cash dividends. The table also shows that firms that pay both dividends and repurchase shares tend to be larger firms with more cash, have a higher market-to-book ratio, and tend to be less profitable. For example, the average (median) asset size of a firm that pays both cash dividends and repurchase shares is $5.696 billion ($708 million), whereas other firms in the sample have average (median) assets valued between $961 million ($267 million) and $4.5 billion ($466 million). The table shows that the sample is skewed as the mean of the variables in the table is larger than the median(5).

**Table 4**
**Firm Characteristics by Payout Policy**

The table reports descriptive firm-level statistics by payout policy in our dataset, consisting of 8,729 firm-year observations. "*Div = 0, Buyback = 0*" is the subset of firms that pay zero dividends and have no buyback activity; "*Div > 0, Buy-*

(5) All variables were winsorized at the 1% level to remove the effects of outliers on the results.

*back = 0*" is the subset of firms that pay dividends with zero buyback activity; "*Div = 0, Buyback > 0*" is the subset of firms that do not pay dividends but engage buyback activity; "*Div > 0, Buyback > 0*" is the subset of firms that both pay dividends and engage in buyback activity; "*Total Assets*" is the book value of assets; "*Market Value*" is the market value of the firm defined as the market value of common stock at the end of the calendar year; "*Market to Book*" is the market-to-book ratio [(book value of assets + market value of equity - book value of equity)/ book value of assets]; "*Cash*" is the book value of cash and short-term investments; "*ROA*" is net income scaled by book value of assets; "*SD ROA*" is the standard deviation of "*ROA*"; "*Net Income*" is the net income of the firm; "*Op. Income*" is operating income; "*Non Op. Income*" non-operating income; "*LT Debt*" is the long-term debt; "*Sales*" is total sales. All data minorized at the 1% level.

| | Div = 0, Buyback = 0 | | | Div > 0, Buyback = 0 | | | Div = 0, Buyback > 0 | | | Div > 0 and Buyback > 0 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Variable** | **Mean** | **Median** | **N** | **Mean** | **Median** | **N** | **Mean** | **Median** | **N** | **Mean** | **Median** | **N** |
| Total Assets | 961.05 | 267.950 | 86 | 4538.05 | 360.33 | 153 | 1412.48 | 466.25 | 241 | 5696.78 | 708.41 | 567 |
| Market Value | 220.56 | 85.050 | 74 | 1400.10 | 331.68 | 140 | 2862.27 | 152.66 | 217 | 5037.78 | 359.90 | 538 |
| Market to Book | 2.71 | 1.939 | 74 | 3.77 | 2.42 | 140 | 5.64 | 2.03 | 217 | 3.63 | 2.40 | 538 |
| Cash | 106.54 | 8.190 | 37 | 855.11 | 61.34 | 66 | 196.66 | 22.77 | 82 | 934.66 | 71.80 | 238 |
| ROA | -2.29 | 0.295 | 82 | 6.61 | 4.56 | 146 | -0.86 | 0.21 | 237 | 6.15 | 4.32 | 553 |
| SD ROA | 9.26 | 8.479 | 86 | 6.43 | 5.60 | 153 | 9.22 | 8.53 | 241 | 6.23 | 5.20 | 567 |
| Net Income | -7.30 | 0.280 | 86 | 92.68 | 20.06 | 153 | -4.33 | 0.82 | 241 | 271.91 | 32.41 | 567 |
| Op. Income | 6.48 | 1.530 | 85 | 130.46 | 19.29 | 150 | 5.91 | 1.92 | 239 | 446.64 | 26.11 | 565 |
| Non Op. Income | -0.01 | -0.002 | 86 | 0.02 | 0.01 | 153 | 0.001 | 0.00 | 241 | 0.02 | 0.01 | 567 |
| LT Debt | 122.09 | 38.610 | 55 | 727.01 | 86.24 | 94 | 239.80 | 65.44 | 160 | 608.74 | 127.71 | 381 |
| Sales | 99.56 | 28.535 | 86 | 509.63 | 73.76 | 153 | 158.02 | 31.20 | 241 | 1077.15 | 106.54 | 567 |

## Results

In order to get a better view of all likelihood of paying dividends and/or repurchase programs, we run a probit regression on firms that pay dividends in Table 5. We find that larger firms, with lower non-operating income, more profitable, with lower volatile returns, and have paid cash dividends in each of the last three previous year are more likely to pay cash dividends.

**Table 5**
**Probit Regression on Dividends Paid**

The table below studies the firm's likelihood to pay dividends using a Probit Regression. "*Dividend Paid*" is a dummy variable set to 1 if dividends are paid, and 0 otherwise; "*Buyback Dummy*" is a dummy variable set to 1 if the firm engages in

repurchase activity, 0 otherwise; "*Log Assets*" is the natural log of "*Assets";* "*Non-Operating Income*" is the non-operating income scaled by assets; "*Market to Book*" is the market-to-book ratio [(book value of assets + market value of equity - book value of equity)/book value of assets]; "*D/A*" is the debt ratio, measured as a long-term debt scaled by assets; "*ROA*" is the net income scaled by book value of assets; "*SD ROA*" is the standard deviation of "*ROA*"; "*Li. Dividend Paid*" is the "*Dividend Paid*" dummy variable lagged *i* years.

| **Dividend Paid** | |
|---|---|
| Buyback Dummy | -0.0635 |
| | (-0.0938) |
| Log Assets | 0.116*** |
| | (-0.0284) |
| Non-Operating Income | -4.721*** |
| | (-1.287) |
| Market to Book | -0.0113 |
| | (-0.0152) |
| D/A | -0.392 |
| | (-0.258) |
| ROA | 0.0591*** |
| | (-0.00736) |
| SD ROA | -0.0395*** |
| | (-0.0106) |
| L1. Dividend Paid | 1.590*** |
| | (-0.118) |
| L2. Dividend Paid | 0.280* |
| | (-0.154) |
| L3. Dividend Paid | 0.469*** |
| | (-0.138) |
| Constant | -1.072*** |
| | (-0.221) |
| Observations | 2,742 |
| Standard errors in parentheses | |
| *** p < 0.01, ** p < 0.05, * p < 0.1 | |

Table 6 runs the same regression on repurchases, and we find that relatively smaller firms with higher market to book ratios, higher non-operating income, and more profitable are more likely to repurchase stock. We also find in Table 6 that only those firms which repurchase stock in each of the last three years are more likely to repurchase stock.

**Table 6**
**Probit Regression on Buybacks**

The table below studies the firm's likelihood to engage in repurchase activity using a probit regression. "*Buyback Dummy*" is a dummy variable set to 1 if the firm engages in repurchase activity, 0 otherwise; "*Dividend Paid*" is a dummy variable set to 1 if dividends are paid, and 0 otherwise;; "*L1. Buyback*" is the "*Buyback*" dummy variable lagged one year; "*L2. Buyback*" is the "*Buyback*" dummy variable lagged two years; "*L3. Buyback*" is the "*Buyback*" dummy variable lagged three years.

Other variables' definitions are listed in Table 5.

| **Buyback** | |
|---|---|
| Dividend Paid Dummy | -0.117 |
| | (-0.0838) |
| Log Assets | -0.0550*** |
| | (-0.0173) |
| Non-Operating Income | 1.331 |
| | (-0.887) |
| Market to Book | 0.0247** |
| | (-0.00979) |
| D/A | -0.0606 |
| | (-0.174) |
| ROA | 0.00989** |
| | (-0.00439) |
| SD ROA | -0.00506 |
| | (-0.0071) |
| L1. Buyback | 1.852*** |
| | (-0.0712) |
| L2. Buyback | 0.559*** |
| | (-0.0889) |
| L3. Buyback | 0.181** |
| | (-0.0871) |
| Constant | -1.218*** |
| | (-0.152) |
| Observations | 3,604 |
| Standard errors in parentheses | |
| *** p < 0.01, ** p < 0.05, | |
| * p < 0.1 | |

In order to predict a firm's payout policy, we use the Lintner (1956) model that relates dividend policy to the firm's target payout ratio and the adjustment of current dividends(6). Following the Grullon and Michaely (2002) model, we break out data set into two periods: a preforecast period and a forecast period. Then we use the Lintner (1956) model in the preforecast period to calculate the expected dividends for the firm given its past dividend activity, calculating in the process the deviations of the firm's expected dividends from the actual paid dividends. If firms complement (substitute) repurchases with (for) dividends, we should expect to find a positive (negative) relationship between the dividends forecast error and the repurchase activity, as stated in the complementary (substitution) hypothesis. In other words, positive (negative) forecast errors, suggesting that the actual dividends are higher (lower) than expected, along with the positive repurchase activity on average; this would suggest a complementary (substitution) relationship between dividends and share repurchases.

Using a preforecast period on the data from 1993 to 2013 inclusive, following Grullon and Michaely (2002) we define the dividend-forecast error for each firm as in Equation (4). The beta coefficients of earnings and lagged dividends are estimated using the Lintner (1956) model during the aforementioned preforecast period(7).

Table 7 shows the parameters of the Lintner (1956) model.

**Table 7**
**Lintner (1956) Model Parameters**

The table shows the mean and median estimates of the Lintner (1956) model parameters by country, as defined in Equation (3):

$$D_{i,t} = \alpha_i + \beta_{1,i} E_{i,t} + \beta_{2,i} D_{i,t-1} + e_{i,t}$$

Where $\beta_1$ estimates the coefficient of earnings, and $\beta_2$ estimates the coefficient of lagged dividends. Both parameters of the Lintner (1956) model are estimated over the preforecast period 1996-2013, inclusive.

| | $\beta_1$ Estimates | | $\beta_2$ Estimates | |
|---|---|---|---|---|
| **Country** | **Mean** | **Median** | **Mean** | **Median** |
| Bahrain | 0.0026 | 0.0003 | 0.0329 | 0.1229 |
| Kuwait | 0.0035 | 0.0004 | 0.1957 | 0.0752 |

(6) Refer to the Data and Methodology section for further model specifications.

(7) The paper also looks at several other preforecast periods and the results can be seen under the Robustness section below.

**Cont. Table 7**
**Lintner (1956) Model Parameters**

| | $\beta_1$ Estimates | | $\beta_2$ Estimates | |
|---|---|---|---|---|
| **Country** | **Mean** | **Median** | **Mean** | **Median** |
| Oman | 0.0263 | 0.0023 | 0.2447 | 0.1294 |
| Qatar | 0.0019 | 0.0002 | 0.0716 | 0.0 |
| Saudi Arabia | 0.0102 | 0.0017 | 0.0630 | 0.0 |
| United Arab Emirates | 0.0129 | 0.0003 | 0.1554 | 0.0597 |
| Total | 0.0105 | 0.0004 | 0.1474 | 0.0645 |

The table shows our estimates of the Lintner (1956) model parameters vary across countries, and the overall average estimate for the coefficient of earnings is 0.0105, and the average estimate for the coefficient of lagged dividends is 0.147, over the aforementioned preforecast period(8). Our average adjusted $R^2$ was 48.6%.

We then study the relationship between the dividend-forecast error and share repurchase yield by running a cross-sectional regression including firm characteristics that may affect payout policy and the dividend repurchase substitution/complementary hypothesis. We regress dividend-forecast error on repurchase yield, market to book ratio, revenue scaled by assets, firm profitability, earnings volatility, non-operating income and debt, as shown in Equation (5).

Following Grullon and Michaely (2002) we use Fama and Macbeth (1973) regressions, on the forecast period from 2014 to 2019 inclusive, to estimate the coefficients in order to reduce the effect of cross-correlation between the residuals. As shown in Table 8, we find that repurchase yield has a significantly positive effect on the dividend-forecast error(9). In other words, the results suggest that firms that pay dividends are complementing their dividends with share repurchases. The evidence supports our complementary hypothesis *H2*, showing that firms headquartered in the GCC complement the use of dividend surprises with repurchases.

(8) Results are similar when removing year 2008 from the preforecast period.

(9) Multicollinearity tests were conducted that showed the absence of any effects in our results.

**Table 8**
**Fama-Macbeth (1973) Regression on Divided-Forecast Error on Repurchase Yield.**

This table uses the average estimates of dividend forecast error using a forecast period of 1996 - 2013 on several firm specific factors to measure the dividend forecast error as defined in the Lintner (1956) model in Equation (4) as:

$$Error_{i,t} = [\Delta D_{i,t} - (\alpha_i + \beta_{1,i} E_{i,t} + \beta_{2,i} D_{i,t-1})]/MV_{i,t-1}$$

Where "$\Delta D_{i,t}$" is the change in dividends for firm *i* at time *t*, "$E_{i,t}$" is the earnings for firm *i* at time *t*, "$D_{i,t-1}$" is the dividends for firm *i* at time *t-1*; and "$MV_{i,t-1}$" is the market value firm *i* at time *t-1*. The $\beta$ coefficients are estimated for each firm from a preforecast period as per Lintner (1956) model.

The table reports the relationship between dividend forecast errors and repurchase yields in Equation (5):

$$Error_{i,t} = \alpha_i + \beta_1 RYield_{i,t} + \sum_{n=2}^{N} \beta_n f_{n,i,t} + e_{i,t}$$

Where "*RYield*" is dollar value of share repurchases at time t scaled by the market value of equity at t-1; "*Market to Book*" is the market-to-book ratio [(book value of assets + market value of equity - book value of equity)/book value of assets]; "*Sales/Assets*" are total revenues scaled by total assets; "*ROA*" is net income scaled by book value of assets; "*SD ROA*" is the standard deviation of "*ROA*"; "*Non-Operating Income"* is non-operating income scaled by total assets; "*D/A*" is total debt scaled by total assets.

| VARIABLES | ERROR |
|---|---|
| RYield | 0.00968** |
| | (-0.00343) |
| Market to Book | 2.41E-05 |
| | (-2.42E-05) |
| Sales/Assets | -0.000108 |
| | (-0.000265) |
| ROA | 1.04E-05 |
| | (-4.02E-05) |
| SD ROA | -1.40E-05 |
| | (-1.24E-05) |
| Non Operating Income | -0.00436 |
| | (-0.00606) |

**Cont. Table 8**
**Fama-Macbeth (1973) Regression on Divided-Forecast Error on Repurchase Yield.**

| VARIABLES | ERROR |
|---|---|
| D/A | -0.000361 |
| | (-0.00059) |
| Constant | -0.00033 |
| | (-0.000342) |
| Observations | 206 |
| Number of Groups | 7 |
| F-Stat | 17.70 |
| R-Squared | 0.369 |
| Standard errors in parentheses | |
| *** p < 0.01, ** p < 0.05, * p < 0.1 | |

## Robustness

We use different preforecast periods in our initial regression to find our dividend surprises in quation (4) and the results feed into our dividend forecast error, out of the main regression, in Equation (5). Our original analysis uses a preforecast period of 1993-2013, and we find the result holds in all our different scenarios and is robust to different preforecast periods. The results can be found in Table 9.

**Table 9**
**Robustness: Regressions Using Different Preforecast Periods**

This table reports the robustness of the results using different dividend forecast periods (shown in the column headers) used to calculate the coefficients in the dividend forecast error equation, $Error_{i,t}$. *The dividend forecast error is defined as per the Lintner (1956) model in Equation (4) as:*

$$Error_{i,t} = [\Delta D_{i,t} - (\alpha_i + \beta_{1,i} E_{i,t} + \beta_{2,i} D_{i,t-1})]/MV_{i,t-1}$$

The table reports the relationship between dividend forecast errors and repurchase yields in Equation (5):

$$Error_{i,t} = \alpha_i + \beta_1 RYield_{i,t} + \sum_{n=2}^{N} \beta_n f_{n,i,t} + e_{i,t}$$

Variable definitions can be found in Table 8

**Table 9**
**Robustness: Regressions Using Different Preforecast Periods**

| | 1993-2010 | 1993-2011 | 1993-2012 | 1993-2014 | 1993-2015 |
|---|---|---|---|---|---|
| VARIABLES | ERROR | ERROR | ERROR | ERROR | ERROR |
| RYield | 0.00720** | 0.00760** | 0.00849** | 0.00967* | 0.0119** |
| | (-0.00268) | (-0.00296) | (-0.0032) | (-0.00406) | (-0.00416) |
| Market to Book | 2.26E-05 | 1.82E-05 | 1.97E-05 | 2.92E-05 | 2.69E-05 |
| | (-1.75E-05) | (-1.89E-05) | (-2.14E-05) | (-2.80E-05) | (-3.42E-05) |
| Sales/Assets | -7.26E-05 | -8.44E-05 | -0.000108 | -0.000264 | -0.000271 |
| | (-0.000182) | (-0.000203) | (-0.000229) | (-0.000252) | (-0.000309) |
| ROA | 2.00E-07 | 7.60E-06 | 1.12E-05 | 4.22E-05 | 3.85E-05 |
| | (-2.87E-05) | (-3.09E-05) | (-3.49E-05) | (-2.92E-05) | (-3.55E-05) |
| SD ROA | -1.89e-05* | -1.46E-05 | -1.32E-05 | -1.42E-05 | -2.41E-05 |
| | (-9.63E-06) | (-9.59E-06) | (-1.08E-05) | (-1.46E-05) | (-1.32E-05) |
| Non-Operating Income | -0.0024 | -0.00289 | -0.00321 | -0.00197 | -0.00224 |
| | (-0.00428) | (-0.00475) | (-0.00537) | (-0.0066) | (-0.00807) |
| D/A | -1.88E-05 | -0.000209 | -0.000304 | -0.000854* | -0.000813 |
| | -(0.000456) | (-0.000463) | (-0.000514) | (-0.000384) | (-0.000467) |
| Constant | -0.000299 | -0.000266 | -0.000293 | -0.000298 | -0.000252 |
| | (-0.000239) | (-0.000264) | (-0.000298) | (-0.000403) | (-0.00049) |
| Observations | 306 | 271 | 237 | 174 | 144 |
| F-Stat | 3.38 | 5.91 | 4.58 | 14.42 | 151.84 |
| R-squared | 0.323 | 0.345 | 0.345 | 0.385 | 0.353 |
| | | Standard errors in parentheses | | | |
| | | *** p < 0.01, ** p < 0.05, * p < 0.1 | | | |

We then use a fixed effects regression of Equation (5) to study the effect of the dividend surprise on firm repurchases. Using the same (lagged) controls shown in Equation (5) and controlling for the country-and-year fixed effects, we find out a strong positive relationship between the repurchase yields and the dividend surprises, further strengthening the positive relationship between repurchases and dividend surprises. We find that the evidence further supports our complementary hypothesis between dividend surprises and share repurchases for firms headquartered in the GCC region. Those results can be found in Table 10.

**Table 10**
**Robustness: Fixed Effects Regressions**

This table reports the average estimates of dividend forecast error on several firm specific factors using a fixed effects regression analysis. The dividend forecast error is defined as per the Lintner (1956) model in Equation (4) as:

$$Error_{i,t} = [\Delta D_{i,t} - (\alpha_i + \beta_{1,i} E_{i,t} + \beta_{2,i} D_{i,t-1})]/MV_{i,t-1}$$

Variable definitions can be found in Table 8. All independent variables are lagged 1 year, and the model controls for country and year fixed effects.

| VARIABLES | ERROR |
|---|---|
| RYield | 0.00805** |
| | (-0.00219) |
| Market to Book | 2.89E-05 |
| | (-5.36E-05) |
| Sales/Assets | -0.00192*** |
| | (-0.000317) |
| ROA | -3.25E-05 |
| | (-6.37E-05) |
| D/A | -0.00401* |
| | -(0.00176) |
| 2014b.year | 0 |
| | (0) |
| 2015.year | 0.000881*** |
| | (-0.000217) |
| 2016.year | 0.000758** |
| | (-0.000242) |
| 2017.year | 0.000613*** |
| | (-0.000134) |
| 2018.year | 0.000729*** |
| | (-0.00014) |
| Constant | 0.000218 |
| | (-0.000188) |
| Observations | 146 |
| Number of Gvkey | 55 |
| R-Squared | 0.061 |
| Standard errors in parentheses | |
| *** p < 0.01, ** p < 0.05, * p < 0.1 | |

Equation (4) shows our main dividend forecast error term, $Error_i$, scaled by market value of the firm to reduce the effect of heteroskedasticity and to directly compare the dividend forecast error and the repurchase yield. We also examine scaling by other factors to determine whether the dividend error is really driven by dividend surprises, not the volatility of the stock price in their respective markets. As such, we scale our dividend forecast error by total assets and by shareholders' equity, as shown in Equations (6) and (7) respectively.

$$Error_{i,t} = [\Delta D_{i,t} - (\alpha_i + \beta_{1,i} E_{i,t} + \beta_{2,i} D_{i,t-1})] / Total\ Assets_{i,t-1} \quad (6)$$

$$Error_{i,t} = [\Delta D_{i,t} - (\alpha_i + \beta_{1,i} E_{i,t} + \beta_{2,i} D_{i,t-1})] / Shareholders\ Equity_{i,t-1} \quad (7)$$

Table 11 shows our main regression in Equation (5) using the dividend forecast error in Equation (6) scaled by total assets and shareholders' equity. We find that the results still hold, further supporting our complementary hypothesis between dividends and share repurchases in a tax-free environment.

**Table 11**
**Robustness: Scaling the Dividend Forecast Error Term by Total Assets and Shareholder's Equity**

This table uses the average estimates of dividend forecast error using a forecast period of 1996 - 2013 on several firm specific factors to measure the dividend forecast error as defined in the Lintner (1956) model in Equations (6) and (7) as:

$$Error_{i,t} = [\Delta D_{i,t} - (\alpha_i + \beta_{1,i} E_{i,t} + \beta_{2,i} D_{i,t-1})] / Total\ Assets_{i,t-1}$$

$$Error_{i,t} = [\Delta D_{i,t} - (\alpha_i + \beta_{1,i} E_{i,t} + \beta_{2,i} D_{i,t-1})] / Shareholders\ Equity_{i,t-1}$$

Where "$\Delta D_{i,t}$" is the change in dividends for firm *i* at time *t*; "$E_{i,t}$" is the earnings for firm *i* at time *t*; "$D_{i,t-1}$" is the dividends for firm *i* at time *t-1*; and "Total Assets *i, t-1*," is the total assets of firm *i* at time *t-1*; and "$Shareholders\ Equity_{i,t-1}$" is the shareholders' equity of firm *i* at time *t-1*. The $\beta$ coefficients are estimated for each firm from a forecast period as per the Lintner (1956) model.

The table reports the relationship between dividend forecast errors and repurchase yields in Equation (5):

$$Error_{i,t} = \alpha_i + \beta_1 RYield_{i,t} + \sum_{n=2}^{N} \beta_n f_{n,i,t} + e_{i,t}$$

Variable definitions can be found in Table 8.

**Table 11**
**Robustness: Scaling the Dividend Forecast Error Term by Total Assets and Shareholder's Equity**

| VARIABLES | *Error Scaled by Total Assets* | *Error Scaled by Shareholder's Equity* |
|---|---|---|
| RYield | 0.00466* | 0.721* |
| | (-0.00191) | (-0.327) |
| Market to Book | 0.0000107 | -0.0000169 |
| | (-0.00000843) | (-0.00123) |
| Sales/Assets | 0.0000588 | 0.0144 |
| | (-0.000158) | (-0.034) |
| ROA | -0.0000126 | -0.00288 |
| | (-0.0000292) | (-0.00432) |
| SD ROA | 0.000000269 | -0.000177 |
| | (-0.00000585) | (-0.000986) |
| Non-Operating Income | -0.00161 | -0.301 |
| | (-0.00286) | (-0.284) |
| D/A | 0.000265 | 0.0941 |
| | (-0.000465) | (-0.106) |
| Constant | -0.000233 | -0.0352 |
| | (-0.000131) | (-0.0272) |
| Observations | 206 | 170 |
| Number of groups | 7 | 7 |
| F-Stat | 16.22 | 19.10 |
| R-Squared | 0.329 | 0.39 |
| | Standard errors in parentheses | |
| | *** p < 0.01, ** p < 0.05, * p < 0.1 | |

## Conclusion

We test whether repurchases are substitutes or complementary to cash dividends in a tax-free environment. Previous literature hypothesizes that repurchases are substitutes to cash dividends because of their tax advantages to investors and because of their flexibility. However, in the absence of any tax constrains, firms might reconsider their payout policy and the substitution between cash dividends and repurchases. We use the Gulf Corporation Council countries as an ideal opportunity to test this hypothesis. Investors of firms in GCC countries do not pay dividend taxes. Thus, firms located in GCC countries make a

perfect setting to test whether firms view repurchases as substitutes or complementary to cash dividends.

Our substitution hypothesis predicts that, as in other countries, firms substitute between cash dividends and repurchases. However, our complementary hypothesis predicts that, because investors of firms in GCC countries do not pay dividend taxes, firms treat cash dividends and repurchases as complements. The complementary hypothesis argues that taxes are the first-order determinant of firm's payout policy. Thus, a firm located in a country where investors do not pay cash dividends might view the substitution between repurchases and cash dividends to be less relevant.

We find evidence that firms listed in GCC countries' market's view repurchases and dividends as complements rather than substitutes. Thus, the results support the complementary hypothesis, making the tax effect the first-order determinant of firm's payout policy. Specifically, we find that increases (decreases) in dividends are associated with increases (decreases) in repurchase activity. Thus, firms in GCC countries do not use funds that would have been used to pay for dividends to repurchase shares as argued by Grullon and Michaely (2002). To the contrary, we find strong evidence that firms complement dividend surprises with repurchase activity.

This paper contributes to the existing literature on the determinants of firm's payout policies. To our knowledge, this paper is the first of its kind to test the substitution between cash dividends and repurchases in a tax-free environment. We show that taxes are the first-order determinant when firms decide their payout policy. Repurchase activity is positively related to dividend surprises in a tax-free environment. This finding is robust to different dividend-preforecast periods, as well as different regression methods and dividend surprise classifications. This conclusion is a further understanding of Miller and Modigliani's (1961) irrelevance theory and the importance of market frictions on payout policy. In perfect and complete capital markets, the irrelevance theory implies that dividends and repurchases are perfect substitutes. However, the results of this paper shed light on the importance of market frictions and their impact on payout policy.

The results and conclusions of this paper are relevant to policy makers in the GCC region when deciding on repurchase regulations or tax policy for cash dividends and repurchases. The finding that cash dividends and repurchases are complements rather than substitutes should be a consideration when defining the ultimate tax policy. Moreover, boards should consider this finding when deciding

their firms' payout policy. Future areas of research might look at this finding when repurchase regulations or tax policies change in the region. Further research can also be done on how the complementary nature of payout policy in a tax-free environment affects firm value, and the clientele effect it may have regarding both institutional and retail shareholders.

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# الملخص

## أتعتبر عمليات إعادة شراء الأسهم بديلاً أم مكملاً لتوزيعات الأرباح النقدية في بيئة معفاة من الضرائب؟ أدلة من الشركات المدرجة في دول مجلس التعاون الخليجي

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**هدف الدراسة:** تستهدف الدراسة الإجابة عن سؤال، مفاده: أتعتبر عمليات إعادة شراء الأسهم بديلاً أم مكملاً لتوزيعات الأرباح النقدية في بيئة معفاة من الضرائب؟ استبدلت الشركات في مختلف دول العالم في العقود الأخيرة بالتوزيعات النقدية عمليات إعادة الشراء، نظراً لانخفاض معدلات الضرائب على مكاسب رأس المال؛ مما يجعل عمليات شراء الأسهم بديلاً جذاباً للتوزيعات النقدية. الأدلة العلمية في مختلف دول العالم تشير بوضوح صريح إلى أن عمليات إعادة شراء الأسهم تعد بديلاً عن التوزيعات النقدية لهذا السبب، في المقابل لا يدفع المستثمرون في دول مجلس التعاون الخليجي ضرائب على توزيعات الأرباح النقدية؛ مما يجعل حافز الاستبدال بين توزيعات الأرباح النقدية وعمليات إعادة الشراء أقل أهمية. **تصميم/منهجية/طريقة الدراسة:** استخدم في الدراسة منهج Lintner (1956) لتقدير توزيعات الأرباح المستقبلية غير المتوقعة؛ ومن ثم طريقة Fama-Macbeth (1973) لتحليل البيانات المقطعية لمقارنة الأرباح المتوقعة مع التوزيعات غير المتوقعة وعمليات إعادة شراء الأسهم. **عينة الدراسة وبياناتها:** جمعت البيانات للشركات التي يقع مقرها الرئيسي في دول مجلس التعاون الخليجي من قواعد بيانات Worldscope و Datastream؛ مما أدى إلى الحصول على 8729 عينة على مدار العام، تمتد من 1993 إلى 2019. **نتائج الدراسة:** خلصت الدراسة إلى أن التغييرات غير المتوقعة في التوزيعات النقدية مرتبطة بشكل إيجابي بعائد إعادة شراء أسهم الشركات التي توزع أرباحاً نقدية أكثر (أقل) من المتوقع تنفق أكثر(أقل) على عمليات إعادة شراء أسهمها. تشير النتائج أيضاً إلى أن توزيعات الأرباح النقدية وعمليات إعادة الشراء يكمل بعضها بعضاً في بيئة معفاة من الضرائب وليست بديلاً كما في بقية دول العالم. ويستنتج من الدراسة أيضاً أن الضرائب على التوزيعات تؤدي دوراً أساسياً عندما تقرر الشركات سياسات توزيع الأرباح. **أصالة الدراسة:** تعد هذه الدراسة – بحسب علم الباحثين – الدراسة الأولى التي تدرس تأثير الاستبدال بين توزيع الأرباح وإعادة شراء الأسهم في سياسة الدفع في بيئة معفاة من الضرائب.

**حدود الدراسة وتطبيقاتها:** تشمل القيود نقص بعض البيانات قبل عام 2003 وبعض القيود الأخرى الخاصة بالبيانات. تأثير الدراسة يكمن في الآتي: كيف يمكن للشركات أن تقرر سياسة الدفع المثلى؟ وكيف يتم وضع لوائح إعادة الشراء في دول مجلس التعاون الخليجي.

**المصطلحات العلمية:** سياسة الدفع، عمليات إعادة الشراء، أرباح، الاستبدال، مجلس التعاون الخليجي.

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