

Institutional investors' tax preferences and the design of executives' compensation packages

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Abstract

While there is evidence that executives' compensation packages are different in the presence of institutional investors in general, it is less clear whether executives' compensation design is an effective tool to impose the preferences of specific institutional investors. We shed new light on this issue by focusing on tax sensitive institutional investors (TSII), a distinct subset of institutional investors that prefer capital gains over dividends to minimize the tax burden of their clientele. Consistent with our predictions, we find a positive association between the presence of TSII and “more capital gains oriented” equity-based compensation packages including more stock options than stock holdings. We also document a stronger association between TSII and stock options when ownership is more concentrated. In addition, through a path analysis, we illustrate how stock options represent a mechanism through which TSII incentivize managers to pay less dividends and make more stock repurchases thus satisfying their preferences. Notably, we observe that our results occur when CEOs hold more in-the-money stock options. Lastly, our findings are stronger in the period before the introduction of the American Taxpayer Relief Act (ATRA) of 2012, when differences in tax sensitivity of the institutional investors' clientele were more pronounced. Our study indicates that shareholder-level tax preferences may not only come from differences in tax rates, but also from the different flexibility necessary to optimize institutional investors' portfolios from a tax perspective, i.e., from non-tax costs.

Keywords: Tax sensitive institutional investors, shareholder taxes, alignment of interest, executives' compensation packages.

JEL Classifications: G35, H24.

Data Availability: Data used in this study are available from public sources identified in the paper.

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I. INTRODUCTION

While several studies document the impact of shareholder-level tax preferences on corporate decisions (e.g., Hanlon and Hoopes 2014; Jacob and Michaely 2017; Amiran, Bauer and Frank 2019), there is less evidence on the channels used by shareholders to impose such preferences. We aim to shed new light on this issue by investigating the link between shareholders' tax preferences and executives' compensation design.

In doing so, we focus on the tax preferences of institutional investors, as they have become one of the major shareholders in the last decades (OECD 2018).¹ Institutional investors are more informed than individual ones (Grossman and Hart, 1980), and devote more resources to improve the efficiency of their monitoring activities as well as to influence managerial decisions (Gillan and Starks, 2000; Hartzell and Stark, 2003; Chetty and Saez 2005; Chen, Harford and Li, 2006; Brav, Jiang, Partnoy, and Thomas, 2008; Desai and Jin 2010; Aghion, Van Reenen, and Zingales, 2013). Recent anecdotal evidence suggests direct influence of institutional investors on managers' compensation packages design. For instance, in March 2018, investors of Walt Disney voted against their CEO (Robert Iger) compensation plan. The board of directors accepted the result of the nonbinding vote confirming they would take it into consideration for the definition of future CEO compensation policies.² Consistent with this, Hartzell and Starks (2003) find that institutional investors play a relevant role in the design of executives' compensation beyond boards of directors, compensation committees and compensation consulting firms.

¹ Institutional investors' ownership is a relevant factor in US companies. For instance, in 2009, institutional investors owned in the aggregate 73% of the outstanding equity in the 1,000 largest U.S. corporations (<https://www.sec.gov/news/speech/2013-spch041913laahtm>). On this point refer also to: https://read.oecd-ilibrary.org/finance-and-investment/oecd-institutional-investors-statistics-2018_instinv-2018-en#page1

² <https://www.reuters.com/article/us-disney-agm/disney-shareholders-vote-against-ceo-igers-pay-package-idUSKCN1GK2MG>. On this point see also: <https://www.capartners.com/cap-thinking/institutional-shareholder-voting-practices-for-say-on-pay/>. More generally, a Spencer Stuart governance survey indicates that the most common topics of discussion between firms and their institutional investors in the US are say on pay (31%) and CEO compensation (19%) (Correa and LeI, 2016).

Although prior studies show that executives' compensation is different in the presence of institutional investors *in general* (Hartzell and Starks 2003; Janakiraman, Radhakrishnan, and Tsang 2010), it is still unclear whether executives' compensation design reflects *specific* preferences of institutional investors. Institutional investors cannot be considered as a homogeneous category as they differ along a number of factors. Given that, executives' compensation design may not always be an effective tool to align managers' and investors' preferences. We focus on tax sensitivity as an important and distinct dimension that can shape how institutional investors leverage on the design of executives' compensation packages to affect firms' decisions (Desai and Jin 2011; Blouin, Bushee, and Sikes 2017). In particular, we examine how tax-sensitive institutional investors (TSII) influence the design of executive compensation packages to impose their tax preferences.

Building on Desai and Jin (2011) and Blouin et al. (2017), we identify TSII as investment advisers whose majority clientele consists of high-net worth individuals. Although investment decisions are rarely made solely on the basis of tax impact, TSII specifically consider tax implications, with the goal of minimizing income tax liability of their clients.³ Consistent with this view, Desai and Jin (2011) document that during their sample period in which the dividend tax rate was higher than the capital gain tax rate, TSII preferred capital gains over dividends. However, nowadays, dividends and long-term capital gains are subject to the same tax rate. While short-term capital gains (i.e., capital gains realized on shares held for less than one year) are taxed at a tax rate up to 43.4%, long-term capital gains (i.e., capital gains realized on shares held for more than one year) are taxed as dividends at a tax rate up to 23.8% for the highest personal income tax bracket. Despite that, TSII's preferences for dividends or capital gains are still different than those

³ See Appendix A for anecdotal evidence.

of non-tax sensitive investors, as dividends are taxed immediately when they are received, whereas capital gains are taxed only when shares are sold (Brennan and Thakor, 1990). Thus, if tax liabilities relative to dividends depend upon managers' payout decisions, tax liabilities relative to capital gains are determined by institutional investors' trading choices (Sikes 2014). TSII may exploit this flexibility and plan when to buy and sell shares to optimize their portfolio and minimize the overall tax burden for their clients to maximize their utility function (e.g. tax-loss harvesting strategy). Following the Scholes-Wolfson framework (Scholes and Wolfson 1992), we contend that TSII will consider the greater (lack of) flexibility given by capital gains (dividends payouts) to better organize their clientele effective tax planning if that exceed the cost of reducing dividends payouts (i.e., managers may misuse excess cash to undertake opportunistic misbehaviours (Blanchard, Lopez-de-Silanes, and Shleifer 1994)). Therefore, although tax rates of long-term capital gains and dividends do not differ, we predict that TSII still prefer capital gains over dividends to carry out an effective tax planning for their clientele, thus, shaping firms' decisions in line with this inclination. At the same time, we expect that the reduction of dividends will take place when TSII have more resources to monitor firms' decisions, thus, alleviating managers' misbehaviours.

In particular, given that previous literature and anecdotal evidence have demonstrated that institutional investors can actively influence the design of compensation packages, we argue that TSII will use executive compensation to ensure that managers pursue *their distinct* interests and meet their preferences for capital gains. Starting from the baseline assumption that TSII prefer more equity-based compensation contracts in line with Type I agency motivations, we predict that TSII will favour equity compensation packages that discourage dividends' payout and are more "capital gains oriented". Specifically, we expect that in the presence of TSII, compensation

packages are leaning towards stock options rather than stock holdings. When stock options are granted, CEOs do not become shareholders and, hence, they do not have the right to receive dividends. CEOs have the possibility to become shareholders in the future if they exercise the option. In the meanwhile, they can benefit from increases in the value of stock options if the firm's stock price is higher than the strike price (e.g. in-the-money stock options). Dividend payouts reduce the value of executives' stock options by decreasing the firm's stock price and, hence, the likelihood of stock options being in-the-money (Lambert et al., 1989). Thus, when stock options are granted, CEOs have low incentives to distribute dividends as they do not have the rights to receive them and their announcement reduces the value of their stock options.⁴ Given TSII's preference for capital gains, we predict that, when they are present, executives' compensation packages will include more stock options rather than stock holdings since this will incentivize managers to maximize stock prices (and hence capital gains) while decreasing the incentives to distribute dividends.

Moreover, if the positive association between stock options and TSII is due to TSII's *influence* over compensation choices, we expect the relation to be different depending on the degree of ownership concentration. In particular, as shareholder conflicts could affect TSII's ability to impose their tax preferences (e.g., Jacob and Michaely 2017), we predict that the positive association between stock options and TSII is stronger when ownership is more concentrated and it is easier for TSII to influence business choices. Instead, when ownership is more dispersed, TSII face more difficulties to imprint their capital gain preferences. Furthermore, when ownership is

⁴ We acknowledge that dividend payouts can play a disciplining role for managers as that will reduce misuse of cash flows (e.g., when managers receive a cash windfall that does not affect their set of investment opportunities, they may be tempted to invest in negative net present value projects (Blanchard et al., Shleifer 1994). Thus, reducing dividends payouts could come at cost of managers' opportunistic misbehaviours. However, as long as TSII have a fiduciary role towards their investees, it is reasonable to expect that the reduction of dividends will take place when TSII have more power to impose their tax preferences while monitoring firms' decisions, thus, alleviating managers' misbehaviors.

more concentrated, managers are exposed to a stronger monitoring that reduces the room for misbehaviours and, hence, the costs associated with a lower dividend payout. As a result, we expect that TSII will be more inclined to include stock options in managers' compensation packages. Notably, if the positive association between stock options and TSII is not due to an "influence effect" but rather to a "matching effect", whereby TSII choose to invest in firms that are already aligned to their interests, we do not expect a significant additional variation in the relation depending on the level of ownership concentration.

We test our hypotheses by comparing CEOs' compensation packages of firms depending on TSII ownership. To detect TSII ownership, we first classify all institutional investors with known information from the IADP data and the 13-F from Thomson Reuters over the period 2010-2017 as either TSII or non-tax-sensitive institutional investors (NTSII hereafter) following Desai and Jin (2011) classification. Then, we sum the holdings of all TSII to determine the overall TSII ownership in line with Sikes (2014). Lastly, we match institutional investor's ownership information with Compustat and Compustat historical segments for firm's financial data and with ExecuComp database for firms' compensation packages information.

Consistent with our predictions, we find a positive association between TSII ownership and equity-based compensation with a prevalence of stock options over shares, which is amplified by ownership concentration. In an attempt to exclude the possibility that our findings are due to firm-level factors associated with the presence of TSII rather than their influence, we consider cases where TSII are the dominant shareholders. Moreover, we use an entropy balance matching procedure to identify a treatment and a control of group of firms that only differ for the presence of dominant TSII. We still document that when TSII are present and hold a dominant stake, CEOs receive more stock options and the effect is stronger when ownership is less dispersed. We use a

path analysis to show that stock options represent a mechanism through which TSII incentivize managers to pay less dividends and make more stock repurchases thus satisfying their preferences. Notably, we find that our results occur when CEOs hold more in-the-money stock options. When stock options are in-the-money, CEOs have more to lose if a dividend is announced. At the same time, the chances that CEOs will exercise them in the future are higher. Once CEOs exercise stock options, they will be eager to pay dividends as they are less exposed to the negative impact that dividend announcement may have on their wealth. Given that, when CEOs hold more in-the-money stock options, TSII grant them more stock options to ensure that part of their wealth will still be at risk if dividends are announced thus reducing CEOs' incentives to pay dividends ex ante.

Lastly, as TSII is not an exogenous variable, we run two additional analyses. First, we analyse whether and how our results change when a tax reform takes place. In particular, we focus on the American Taxpayer Relief Act (ATRA) of 2012 that occurred during our sample period.⁵ The ATRA introduced an additional medical care taxation for all income brackets. This resulted in an increase of the capital gains tax rate of low-wealth tax bracket individuals, thus, decreasing capital gain tax rates differences between low-wealth and high-wealth tax bracket individuals (i.e. it decreased differences in the tax sensitivity of TSII and NTSII). In line with this idea, we document that our results are stronger in the period before 2013 where differences in tax sensitivity of the clientele of institutional investors were more pronounced. Second, we investigate whether the higher presence of stock options is due to TSII's preferences for growth firms by inspecting the

⁵ The American Taxpayer Relief Act (ATRA) created a new top marginal tax rate bracket at 39.6% (while the top marginal tax rate until 2012 was 35%). Further, capital gain taxes (at the top bracket) increased from 15% to 20%. An additional Net Investment Income Tax was imposed by section 1411 of the Internal Revenue Code. The NIIT applies at a rate of 3.8% to certain net investment income of individuals, estates and trusts that have income above the statutory threshold amounts. Individuals will owe the tax if they have Net Investment Income and also have modified adjusted gross income over the following thresholds: Married filing jointly \$250,000; Married filing separately \$125,000; Single \$200,000; Head of household (with qualifying person) \$200,000; Qualifying widow(er) with dependent child \$250,000. For a more details: <https://taxfoundation.org/federal-capital-gains-tax-rates-1988-2013/>

association of granting more stock options and corporate investments. We fail to find consistent evidence that in our sample firms with more stock options invest more in R&D thus attenuating concerns that our positive association is merely due to a matching effect.

Our study adds to different streams of existing literature. First, we contribute to the literature on the link between shareholder-level tax preferences and corporate decisions by enriching our understanding of one specific channel used by shareholders to impose their tax preferences, i.e., the design of executive compensation. Specifically, we show that TSI grant more stock options to incentivize managers to focus on capital gains rather than dividends to align interests with their tax preferences. This result is amplified when ownership is more concentrated and TSI have more room to influence business choices. Notably, our evidence suggests that institutional investors' tax preferences are not only related to differences in tax rates (e.g., dividends and capital gain tax rates): non-tax costs (i.e. the different flexibility underlying dividend payouts and capital gains to optimize portfolios from a tax perspective) play a relevant role in TSSI's decisions. In doing so, we also contribute to the call for research by Hanlon and Heitzman (2010) on non-tax costs. Second, we add to prior literature on the influence of institutional investors on executives' compensation – which simplistically assumes that the group of institutional investors is homogenous – by exploiting the heterogeneity of institutional investors in terms of tax preferences. Lastly, we complement prior research on compensation by showing that institutional investors' tax sensitivity is an important variable that needs to be taken into account to explain compensation contracts' design, especially with reference to stock options' choices. In this way, our study contributes to the long-lasting debate on the role of taxation in compensation packages, in general, and stock options, in particular. Specifically, our evidence complements the recent study by De Simone, McClure and Stomberg (2020), which shows that firms do not change compensation

packages after a reduction in firms' tax benefits for granting stock options, by pointing out an alternative important factor to consider while examining the role of taxes in executive's compensation contracts design, i.e., shareholders' tax preferences. By doing so, our findings contribute to the debate on the pros and cons of this type of incentive in practice and they can inform regulators about the tax costs and non-tax costs firms consider when designing executive compensation.

II. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Institutional investors' ownership has considerably increased in the last decades. They hold more than the 70% share of US public firms (ICI, 2015) and they manage more than 6 trillion assets (which is approximately the GDP of Germany and the UK altogether). Given their relevant presence in firms' ownership structures, it is not surprising that prior literature has extensively investigated the role of this specific shareholder-type (Coffee 1991). Indeed, extensive literature has shown that institutional investors are important actors that influence firms' governance and policies due to better monitoring (e.g., Chen et al. 2006; Brav et al. 2008; Aghion, et al. 2013). Besides gathering more and better information, the benefits of monitoring include being able to influence managerial decisions as well as potential financial gains from exerting influence. For instance, Chen et al. (2006) indicate that the larger the holdings of an institution and the longer the time it has been investing in the firm, the lower the associated costs of exerting monitoring activities as institutional investors will have better access to the senior management and the board of directors (Carleton, Nelson, and Weisbach 1998). By focusing on a specific type of institutional investors (activist institutional investors), Brav et al. (2008) and Aghion et al. (2013) show that

institutional investors try to actively influence managerial decisions by selling their shares when managers perform poorly.

One way for institutional investors to impose their preferences on the firms in which they invest is to influence executives' compensation contract structures (Hartzell and Starks 2003). Managers' incentive compensation helps to better align shareholders' and executives' interests. Accordingly, Hartzell and Starks (2003) show that institutional investors have a strong preference towards pay for performance equity-based compensation and they can influence firms' decisions by shaping the design of compensation packages aligned with their own preferences. However, the authors assume that institutional investors are a homogenous category so that it is unclear whether compensation packages really reflect specific institutional investors' preferences. In this paper, we shed new light on this issue by exploiting heterogeneity in shareholders' tax preferences as a peculiar feature that can play a relevant role in the design of executives' compensation.

Institutional investors' tax preferences are not homogeneous across all institutional investors. As there is not a commonly accepted definition for 'tax sensitive investors', prior literature identifies tax-sensitive institutional investors based on their clienteles' tax preferences. In particular, we follow Desai and Jin (2011) and Blouin et al. (2017) who define TSII as investment advisers whose majority clientele consists of high-net worth individuals who prefer capital gains over dividends.⁶ Although tax rates of dividends and long-term capital gains do not differ any longer, investors have some flexibility to plan taxation around capital gains whereas they do not have it for dividends.⁷ In particular, dividends payouts are taxed immediately when they are

⁶ Note that tax-sensitivity is not related to the tax planning (i.e. tax avoidance) of the firm. As in Hanlon and Heitzman (2010) and Dyreng et al. (2008), tax avoidance refers broadly to the strategies carried out by the firm to reduce explicit taxes (i.e. all transactions that have any effect on the firm's explicit tax liability).

⁷ Income received from institutional investors are included in shareholders' taxable income in the form of capital gains or dividends. Capital gains are subject to be taxed when the stock is sold by the institution whereas dividends are taxed when they are received. Therefore, tax sensitive institutional investors have a preference towards capital gains as they have more flexibility to rebalance their portfolios and minimize the tax impact for their clients. For instance, Sikes (2014) shows that, prior to year-end, tax sensitive

received, whereas capital gains are taxed when shares are sold. Thus, institutional investors can strategically plan when to pay taxes on capital gains, while this is not an option for dividends. Along these lines, Sikes (2014) finds that TSII partially explain the turn-to-year effect through tax-loss-selling strategies, therefore selling small stocks to get tax benefits by the end of the year (i.e. rebalancing their portfolio by the year-end).

Tax-sensitivity is an important characteristic of institutional investors as prior studies have shown that shareholder-taxes have an effect on corporate policies and shareholders' investment decisions (e.g. Desai and Jin 2011; Hanlon and Hoopes 2014; Amiran et al. 2019). Desai and Jin (2011) show that TSII are less likely to keep their investments in firms with larger dividends payouts.⁸ Hanlon and Hoopes (2014) document that firms shift from regular dividends to issue special dividends to impede increases in shareholders' individual tax rates. Along these lines, Jacob and Michaely (2017) show that privately held institutional investors consider the tax preferences of shareholders while deciding dividends payouts. The main effect is moderated through coordination among owners, heterogeneity among owners' tax preferences and diversion of objectives between managers and owners. More recently, Amiran et al. (2019) show that managers consider investor-level taxes when deciding whether to engage in costly tax avoidance. Thus, prior works show that shareholders-tax preferences influence corporate decisions in a distinctive manner but the mechanism used to do that is still unexplored.

In this paper, we combine prior literature suggesting that institutional investors can actively influence the design of executive compensation to better align firms' decisions to their interests (Hartzell and Starks 2003) with the nascent stream of research on institutional investors' tax

institutional investors sell stocks that have declined in value to realize tax losses. In this way, tax sensitive institutional investors can balance their portfolios according to their tax preferences whereas with dividends they do not have this option.

⁸ Note that Desai and Jin (2011) sample period is before the introduction of the JGTRRA (i.e. a period of time in which there was a relevant difference between the taxation of long-term capital gains and dividends).

preferences, contending that the design of executives' compensation contracts is a potential channel through which shareholders can impose their tax preferences. By considering the Scholes-Wolfson framework (Scholes and Wolfson 1992), we predict that TSII will take into consideration the greater (lack of) flexibility given by capital gains (dividends payouts) to manage their clientele portfolio in an efficient manner. By reducing dividends payouts, however, they could bear the risk that managers have more room to misbehave. That is, managers may misuse the cash in excess by engaging in sub-optimal investment projects (Blanchard, Lopez-de-Silanes, and Shleifer 1994). Based on these premises, we predict that, although tax rates of long-term capital gains and dividends do not differ, TSII still prefer capital gains over dividends to carry out an effective tax planning for their clientele, thus, influencing firms' decisions in line with their preferences. Moreover, given the costs potentially associated with the lower dividend payout, we expect that TSII are more likely to impose their preferences for capital gains when they can better monitor managers' decisions, thus alleviating their opportunistic behaviours. In general, equity-based compensation aims to better align shareholder and managerial interests so that it is reasonable to expect that TSII will use more equity-based compensation to align their interests with those of managers. Yet, equity-based compensation has several-subcomponents and their mix is a relevant factor to consider in order to properly incentivize executives and align their interests with those of shareholders. For instance, stock options are specifically designed to decrease executives' risk-aversion to undertake risky investments that would increase shareholders' wealth as executives are motivated by gains linked to the appreciation of the stock price. Notably, the value of stock options is higher when firm's stock price is higher than the strike price. As dividend announcement results in a drop in firm's stock price, CEOs awarded with stock options are motivated to decrease the dividend payout to keep or increase the expected value of the stock options (Lambert et al., 1989).

In contrast, stock holdings automatically give executives some shareholders' benefits in the form of dividends payouts. Consequently, managers granted with stock holdings (or a higher proportion of) are more motivated to maximize dividends payouts, while managers granted with stock options (or a higher proportion of) will maximize more capital gains than dividends.

We specifically argue and predict that TSII will align managers' preferences with their own by preferring more "capital gain oriented" executives' compensation packages. Hence, we predict that, when TSII are present, CEOs will receive more equity-based compensation and, in particular, they will receive more stock options. Formally stated:

H1a: A positive association exists between the ownership held by TSII and the weight of the equity-based compensation included in CEO compensation packages

H1b: A positive association exists between the ownership held by TSII and the weight of the stock options included in CEO equity-based compensation

There are several reasons for this relation not to hold. First, as a difference in tax rates related to dividends and long-term capital gain taxes does not exist anymore, TSII could be indifferent on this matter if they do not consider non-tax costs. Second, if stock options are given to executives only with the goal of incentivizing risk-aversion, institutional shareholders' tax-sensitivity should not play an important role while designing executives' compensation contracts. If one of the two explanations or both of them hold, we will not be able to reject the null hypothesis.

So far, based on the argument that executives' compensation packages mitigate Type I agency problems (Harris and Raviv 1979; Holmstrom 1979; Grossman and Hart 1983; Jensen and Murphy 1990), we expect that TSII exert pressure on firms to design compensation packages that would motivate executives to maximize outcomes that are in line with their tax preferences. Jacob and

Michaely (2017) find that shareholders' taxes affect dividend payouts for small, closely held firms, but this effect is mitigated when Type II agency conflicts arise. They contend that this is due to three distinct factors: coordination problems among owners, tax preferences heterogeneity and dispersion of owners. In the spirit of Jacob and Michaely (2017), we predict that TSII are better able to shape CEOs' compensation contracts to reflect their capital gains preference when ownership structure is less dispersed. In other words, we predict that, when ownership concentration is high, it is easier for TSII to influence the design of executives' compensation contracts according to their interests. Moreover, the higher ownership concentration implies a stronger monitoring over managers that have less room to behave in an opportunistic way. Hence, the possibility that the lower dividend payout will increase managers' misbehaviours is reduced. As a result, TSII will be more inclined to push for stock options. Thus, we state our second hypothesis as follows:

H2: The positive association between ownership held by TSII and stock options is stronger when ownership structure is more concentrated.

We acknowledge that other than an "influence" story, there could be a "matching" story, whereby TSII choose to invest in firms that are already aligned to their interests, i.e., in our case, with compensation packages already designed to influence executives' behaviours in line with their preferences. If the matching effect dominates, we should not expect this association to vary with the degree of ownership concentration.

III. RESEARCH DESIGN, DATA AND SAMPLE

Research Design

To test our predictions, we examine the association between TSII and compensation packages. In particular, we run the following OLS regression equation:

$$Y_{it+1} = \alpha + \beta_1 Tax_sensitivity_{it} + \beta X_{it} + Industry\ FE + Year\ FE + \varepsilon_{it} \quad (1)$$

Y_{it} is the equity-based CEO compensation over total CEO compensation (*ECB*), stock option CEO compensation over total equity CEO compensation (*Stock_options*) and total stock holdings over total equity CEO compensation (*Stock_holdings*). The dependent variables are taken at time (t+1) to attenuate reverse causality concerns. Our focus on the CEO is not surprising and it is in line with previous contributions on compensation: the CEO is the most influential role and the ultimate decision maker when it comes to setting a company's direction and choices. Our coefficient of interest is *Tax_sensitivity*. The measurement of *Tax_sensitivity* is discussed in detail in the next section.

According to H1a and H1b, we expect that β_1 is positive and statistically significant when the dependent variable is equity-based compensation over total compensation (*ECB*) and stock option compensation over total equity compensation (*Stock_options*). However, for total stock holdings over total equity compensation (*Stock_holdings*) we predict two options: a negative relation will indicate that the presence of a TSII is associated with lower stock holding grants whereas a no significant coefficient will indicate that the presence of TSII has not an effect for more or less executives' stock holdings grants.

βX represents a vector of control variables that have been commonly used in prior literature on compensation and tax (e.g. Armstrong et al., 2015; Rego and Wilson, 2012). First, we include the percentage of institutional ownership (*Istown*) to ensure that *Tax_sensitivity* does not capture the generic effect of having institutional investors. Moreover, we include a set of firm-level

characteristics such as firm size (*Size*), firm performance (*Pre-tax ROA*), firm risk (*ROA Volatility*), leverage (*Lev*), total investment (*Tot_inv_alt*), research and development expenses (*R&D*), discretionary accruals (*DA*), and number of geographical segments to account for firm complexity (*Geo_Complexity*). In addition we control for CEO age (*CEO_age* and its squared term *CEO_age_sq*) and the total cash compensation of the CEO (*CEO Cash Comp*). Lastly, we include industry and year fixed effects to control for time and industry heterogeneity in CEO compensation⁹. To deal with possible outliers, control variables are winsorized at 1% and 99% level. To improve the identification, we use robust standard errors.

As a next step, we test H2 according to which the effect of tax sensitive investors on CEO compensation is contingent on the level of ownership concentration. To this end, we add to Eq. (1) the interaction term between *Tax_sensitivity* and ownership concentration as follows:

$$Y_{it+1} = \alpha + \beta_1 Tax_sensitivity_{it} + \beta_2 Ownership_concentration_{it} + \beta_3 Tax_sensitivity_{it} \times Ownership_concentration_{it} + \beta X_{it} + Industry\ FE + Year\ FE + \varepsilon_{it} \quad (2)$$

Ownership_concentration is the concentration of institutional ownership and it is proxied through the Herfindhal Index of all institutional holdings in firm (i) at time (t). Higher values of *Ownership_concentration* indicate a more concentrated ownership structure. We expect β_3 to be positive and statistically significant if tax sensitive investors are able to influence executive compensation thus imposing their preferences. Instead, we expect β_3 to be non-significant if the association between tax sensitive investors and executive compensation is mainly due to a matching mechanism. Model specifications are the same as in Eq. (1). All variables are described in Appendix B.

⁹ Both our dependent and independent variables tend to be sticky over time so that the inclusion of firm-fixed effects is not warranted.

Tax sensitivity

The identification and measurement of *Tax_sensitivity* is key for our empirical strategy. We rely on Desai and Jin (2011) using the IAPD (Investment Adviser Public Disclosure) data to build our proxy. The IAPD data contains self-reported clientele information classified into ten categories. As noted in Desai and Jin (2011) the ten categories comprise: individuals (other than high net worth individuals); high net worth individuals; banking or thrift institutional investors; investment companies (including mutual funds); pension and profit-sharing plans (other than plan participants); other pooled investment vehicles (mostly hedge funds); charitable organizations; corporations or other businesses not listed above; state or municipal government entities; and “others” such as non-U.S. government entities. We use IAPD data to classify institutional investors as tax sensitive if more than 50 percent of their clientele are high-net worth individuals or hedge funds. No tax sensitive institutional investors are those for which more than 50 percent of their clientele are pension funds, state and local governments and charitable organizations.

After having identified TSII according to IAPD data, we merged them with institutional holdings as retrieved from 13F form. 13F form provides information about holding of institutional investor (i) in firm (j). Thus, the merge enables us to distinguish whether institutional investor (i) is tax sensitive or non-tax sensitive. We adopt a fuzzy merge procedure that uses the similarity of investor’s name as matching variable¹⁰. After having identified tax-sensitive institutional holdings and non-tax sensitive institutional holdings, we determine the institutional holdings of all tax-sensitive investors for firm (j) at time (t). Lastly, we compute *Tax_sensitivity* by dividing the total holdings of tax sensitive institutional investors by total institutional holdings in firm (i) at time (t) in line with Sikes (2014). Although 13F are filled every quarter, our dependent variables have an

¹⁰ We manually validated the goodness of the matching process.

annual frequency. Therefore, in order to keep consistency, we take the yearly average of *Tax_sensitivity* as our main proxy¹¹.

Sample and data

We test our hypotheses in a sample of S&P 1500 firms in the period 2010-2017. The focus on S&P 1500 is driven by the availability of executives' compensation data in ExecuComp. We start our sample period in 2010 to avoid the confounding effect of the Great Financial Crisis. We use the IAPD data provided by the SEC, and the 13-F filing data from Thomson Reuters to classify institutional investors as tax-sensitive or tax-insensitive as described above. We then use the Compustat and Compustat Historical Segments for companies' financials. After having computed all the variables of interest, our sample results in 4,985 firm-year observations from 2010-2017.

Descriptive statistics are reported in Table 1. Table 1 shows that the average of TSII in the sample is 10.9 percent¹². The mean of cash compensation is very high (7.451) which is consistent with our sample of very large firms. The equity-based compensation weight for the CEO has a mean of 49.7 percent and is mainly related to stock holdings (33.2 percent) showing a mean of 16.5 percent for stock options. Firms in our sample are, on average, large firms, profitable (*Pre-tax ROA*=7.9 percent), not highly leveraged (23.6 percent) and with low R&D expenses. CEOs are on average 56 years old.

[INSERT TABLE 1 HERE]

¹¹In additional untabulated analyses, we consider the percentage of tax sensitive investors over total number of institutional investors in line with Desai and Jin (2011), and we obtain similar results.

¹² The distribution of *Tax_ownership* in our sample is similar to Sikes (2014) as she also documents low values *Tax_ownership* that starts to take results different from 0 after the median. Notably, Sikes (2014) winsorizes *Tax_ownership* at 1% level to attenuate the effects of outliers. If we remove the cases where *Tax_ownership* is 100%, the average value of *Tax_ownership* drops at 4% (i.e. closer to the median value). Our conclusions hold if we exclude such extreme cases.

IV. RESULTS

TSII and compensation packages

Table 2 reports results for Eq. (1) that tests the association between tax-sensitive institutional investors and compensations packages.

INSERT TABLE 2 HERE

We first test if tax-sensitive investors are associated with executives' equity-based compensation of the firms in which they invest. Column [1] provides results for the baseline model using aggregated equity-based compensation as dependent variable. We document that β_I is positive and statistically significant ($\beta_I = 0.0348$; p-value < 1%) in line with hypothesis H1a. Thus, tax-sensitive institutional investors use more equity-based compensation to align managerial interests with their preferences. The signs of the coefficients of the control variables are in line with findings from prior research in compensation (i.e., Choe, Tian and Yin 2014; Jiang et al. 2010; Hartzell and Starks 2003).

Then, we inspect which specific item of the equity-based compensation package drives our results by distinguishing between stock options and stock holdings. Columns [2] and [3] show results for stock options and stock holdings, respectively. We find that β_I is positive and statistically significant in Column [2] when stock options are considered ($\beta_I = 0.0328$; p-value < 1%). Instead β_I is positive but not statistically significant at conventional levels in Column [3] when stock holdings are examined ($\beta_I = 0.0019$; p-value > 10%). This suggests that the positive association between equity-based compensation and tax-sensitive investors observed in Table 2 Column [1] is driven by stock options. Thus, empirical evidence confirms H1b showing that, as dividend-averse shareholders, tax-sensitive investors prefer executive's compensation contracts

that reduce managers' incentives to distribute dividends. Hence, they prefer to grant more stock options as the latter can better align executives' incentives with their preference for capital gains over dividends.

TSII and compensation packages – the role of ownership concentration

Table 3 shows results for Eq. (2) testing the moderating role of ownership concentration in the association between tax-sensitive investors and compensation packages (H2). Column [1] provides results when aggregated equity-based compensation is the dependent variable while Columns [2] and [3] show results for stock options and stock holdings, respectively.

Contrary to the empirical evidence reported in Table 2, the coefficient for *Tax_sensitivity* (β_1) is negative and statistically significant in Column [1]. As we include the interaction term between *Tax_sensitivity* and *Ownership_concentration*, β_1 captures the effect of tax-sensitive investors on compensation packages when the ownership concentration is more dispersed (i.e., close to zero). Thus, the negative β_1 suggests a negative association between tax-sensitive investors and equity-based compensation when the ownership structure is more dispersed and, hence, tax-sensitive investors may be less able to impose their preferences and monitor managers. Notably, the negative coefficient for *Tax_sensitivity* is mainly driven by stock holdings while we fail to find evidence for a significant association for stock options. Looking at the coefficient for *Ownership_concentration* (β_2), we observe that it is non-statistically significant for overall equity-based compensation (Column [1]) and stock holdings (Column [3]). β_2 is positive and statistically significant in Column [2] when stock options are considered suggesting that stock options are higher when ownership is more concentrated. This is in line with some empirical studies documenting that incentive alignment at the top is lowest when ownership dispersion is high (Werner, Tosi and Gomez-Mejia 2005) but challenges some evidence suggesting that large

institutional owners are more effective in reducing stock options (Khan, Dharwadkar and Brandes 2005).

We now turn to our coefficient of interest (β_3), capturing the interaction term of *Tax-sensitivity* and *Ownership_concentration*. β_3 is positive and statistically significant at least at the 5 percent level across all columns. Notably, the linear combination of β_1 and β_3 reported at the bottom of the table is positive and statistically significant at the 5 percent level in Column [1] and [2], while it is not statistically significant at conventional levels in Column [3]. These findings are consistent with H2, according to which the positive association between TSII and stock options is stronger when ownership structure is more concentrated. When ownership is more concentrated, TSII are in a better position to impose their preferences and, hence, executives will receive more stock options in attempt to foster capital gain maximization while minimizing dividend payout.¹³ These results also suggest that the positive relation between ownership held by TSII and stock options is explained by TSII's influence over compensation packages rather than by a matching mechanism. In the subsequent section, we further dig into the issue by inspecting the impact of TSII compensation choices on dividend payout and stock repurchases.

INSERT TABLE 3 HERE

Additional Analyses and Robustness Tests

Robustness tests for TSII

Our conclusions hinge upon the ability of our measure of TSII to capture the influence of tax-sensitive investors. Given that, it is important to verify whether our proxy captures the tax sensitivity feature of institutional investors, and our results are due to tax-sensitive investors'

¹³ In untabulated additional analyses, we include the interaction term between *Istown* and *Ownership_concentration* as further control. Results hold.

influence over corporate decisions. To this end, besides looking at the websites of most of the TSII included in our sample¹⁴, we run two robustness tests.

First, we inspect if TSII is associated with other corporate outcomes as predicted by prior studies analyzing tax-sensitive institutional investors. According to Blouin et al. (2017), TSII are characterized by lower portfolio turnover than tax-insensitive institutional investors and they tend to stay longer in a firm in order to benefit from lower tax rates. If tax-sensitive investors are reluctant to trade, we should observe that firms with a stronger presence of TSII are more illiquid. We test our conjecture by regressing stock illiquidity at time (t) on *Tax_sensitivity* and a set of control variables as in Eq. (1). Stock illiquidity is proxied by the yearly median bid-ask spread. For the sake of completeness, we also re-run our analysis by including the interaction term with *Ownership_concentration*. Empirical evidence is reported in Table 4. Column [1] shows the results for the baseline association between stock illiquidity and tax sensitivity while Column [2] reports the findings for the moderating role of ownership concentration.

In line with our expectations, the coefficient for *Tax_sensitivity* is positive and statistically significant at 5 percent level both in Columns [1] and [2], suggesting that, when tax-sensitive ownership is higher, the firm is more illiquid. This finding is in line with the idea that trading is lower in presence of tax-sensitive investors. Notably, in Column [2] we observe the coefficient for the interaction term *Tax_sensitivity x Ownership_concentration* is negative and statistically significant at the 1 percent level. Thus, the positive association between tax ownership and stock

¹⁴ With the goal of verifying our proxies, we looked at some of the websites of the TSII in our sample. TSII include institutional investors as Kayne Anderson Rudnick Investment Management LLC., Bainco International Investors and Lenox Wealth Management, Inc. By looking at their websites, we found that these institutional investors have a strong focus on a customized and dynamic portfolio management based on their clients' needs, which indicates a very active approach. Most of the institutional investors highlight the close personal attention they provide to their clients and link their investment strategy to a very detailed and careful research. Further, they point out the long-term orientation they have as an investment strategy and, in many cases, they have a direct mention to investment tax efficiency which gives us comfort on the adequacy of our proxy. For more details and examples, see Appendix A.

illiquidity is weaker when ownership is more concentrated. We conjecture that, when ownership is less dispersed, it is easier for tax-sensitive investors to impose their preferences for capital gains, which may lead TSII to prefer stock repurchases over dividends. The greater stock repurchases can imply higher trading frequency that may explain the lower stock illiquidity when tax-sensitive institutional investors are present and the ownership structure is more concentrated.

INSERT TABLE 4 HERE

Second, we inspect whether our results are due to TSII's influence rather than to tax-sensitive investors' decision to invest in firms with specific characteristics. To this end, we identify cases where tax-sensitive ownership is the dominant type of ownership in the firm. Indeed, when they are the dominant shareholders, TSII should be in a better position to exert their influence over corporate decisions. Thus, we create a dummy variable (*Dominant_tax_sensitive*) that is equal to 1 if *Tax_sensitivity* is greater than 5 percent, and 0 otherwise. The usage of 5 percent as cut off is in line with prior works (Allen and Panian, 1982) analyzing the effect of dominant shareholders. After having detected instances where tax-sensitive ownership is the dominant type of ownership, we adopt an entropy balance matching procedure through which we match firms with and without TSII as dominant shareholders using firm-level characteristics used in Eq. (1) as controls. In this way, we can identify two groups of firms that have similar characteristics and they only differ for the presence of TSII as dominant shareholders.

Empirical evidence is reported in Table 5. To attenuate concerns that findings for the entropy balance procedure are affected by the different measure of TSII¹⁵, we report both the results for

¹⁵*Dominant_tax_sensitive* is equal to 1 in 123 firms. It is important to point out that our main proxy for TSII (*Tax_sensitivity*) is a continuous variable. Hence, it is not apt to a matching procedure that requires a dichotomous variable to identify the treatment and control group of firms to match.

Eq. (1) and (2) substituting *Tax_sensitivity* with *Dominant_tax_sensitive*, and the results using the entropy balance procedure. In particular, Panel A shows the findings for Eq. (1) testing H1a and H1b for the full sample (Columns [1], [2] and [3]) and using the entropy balance procedure (Columns [4], [5] and [6]). Panel B shows the results for Eq. (2) verifying H2 for the full sample (Columns [1], [2] and [3]) and using the entropy balance procedure (Columns [4], [5] and [6]).

In Table 5 Panel A, the coefficient for *Dominant_tax_sensitive* is positive and statistically significant in Column [5] when the entropy balance procedure is used, while it is not statistically significant in Column [2]. Thus, when we account for different characteristics of firms with and without dominant TSII, we still document that the presence of TSII is associated with more stock options in line with H1b. In Table 5 Panel B, the coefficient for *Dominant_tax_sensitive x Ownership_concentration* is positive and statistically significant both in Column [2] and in Column (5), when the entropy balance procedure is used. Above all, the linear combination of *Dominant_tax_sensitive* and *Dominant_tax_sensitive x Ownership_concentration* is positive and statistically significant in line with the evidence reported in Table 3: when ownership is concentrated, stock options are greater when TSII are present and exert a stronger influence as they represent the dominant owners. Hence, taken together, results reported in Table 5 attenuate the concerns that our findings are driven by different firm-level characteristics rather than the presence and influence of TSII.

INSERT TABLE 5 HERE

Lastly, we run placebo tests where we investigate the impact of stock options granted by tax-sensitive institutional investors on corporate investments. According to Blouin et al. (2017), tax-sensitive institutions prefer firms with lower growth and risk. At the same time, prior works in

compensation literature (e.g., Sanders 2001; Wu and Tu 2007) contend that stock options are granted in order to foster firm growth. Given that, it is important to rule out that our findings are not merely driven by TSII's selection of firms with peculiar growth patterns that can also explain the choice of more stock options to managers. In our main analyses, we already added a control for growth opportunities. However, this may not be enough to account for the role of unobservable growth opportunities. Therefore, following Bowen et al. (2008), we use a system of two equations. In the first step, we re-run Eq. (2) using stock options as dependent variable. In the second step, we regress R&D expense on stock options and a set of control variables. If our findings are due to the systematic selection of firms with low growth, we should observe that R&D expenses are lower when TSII are present and they are positively associated with stock options. In addition to R&D expenses, we also estimate the system of equations considering capital expenditures because they represent a less risky type of investments that firms can undertake to pursue their growth opportunities. As they are less risky, executives receiving more stock options have lower incentives to make this type of investments. Therefore, if firm growth is the main driver of our findings, we should observe that capital expenditures are positively associated with TSII and negatively related to stock options.

In untabulated evidence, we observe that stock options are positively and significantly associated with R&D expenses and negatively and significantly associated with capital expenditures in line with our expectations and prior studies in compensation. Instead, we do not find consistent evidence that R&D expenses are higher and capital expenditures are lower when tax sensitive investors are present and ownership structure is concentrated. The lack of a significant pattern may suggest that TSII do not have a clear preference for growth or no-growth firm thus attenuating concerns that our results are driven by tax-sensitive investors' selection of firms with

specific growth prospects, which in turn lead to the granting of more/less stock options to executives.

Path analysis: Test for the mechanism

So far, we have argued that TSII influence compensation packages to better align executive incentives with their preference for capital gains over dividends. In particular, as stock options are negatively associated with dividend payout (Lambert et al., 1989), TSII grant more stock options to reduce executives' incentives to distribute dividends and, hence, satisfy their preferences. To establish whether the design of CEO compensation is the mechanism through which TSII ensure that their tax preferences for capital gains over dividends are met, we conduct a path analysis (Wright 1934). Following Tsang et al. (2019), we estimate a structural equation model (SEM) of the direct effect of TSII on dividend payout, as well as its indirect effect through CEO compensation features (i.e. *ecb*, *Stock_options* and *Stock_holdings*) as mediating variables. The SEM estimation involves two regressions: a regression of dividend payout on TSII and the mediating variable, CEO compensation features, and a regression of CEO compensation features on TSII. In both regressions, we include the set of control variables identified in Eq. (2). The indirect effect of TSII on dividend payout is the product of the effect of TSII on the mediating variable and the effect of the mediating variable on dividend payout. The significance of the direct and indirect effects is estimated using the Sobel (1982) test statistics. Since our goal is to investigate whether CEO compensation is the mechanism through which TSII impose their influence, we focus on the interaction term *Tax_sensitivity x Ownership_concentration* as it better captures TSII influence over corporate choices.

Table 6 Panel A reports the results from the path analysis for dividend payout. Dividend payout is measured as cash dividends divided by ending value of total assets¹⁶. As in the main analysis, we consider dividend payout at time (t+1). We use each of the three CEO compensation features under study (*ECB*, *Stock_options* and *Stock_holdings*) as the mediating variable in Columns [1], [2] and [3], respectively.

Consistent with prior studies documenting dividend aversion of TSII (Desai and Jin, 2010), we find that *Tax_sensitivity x Ownership_concentration* has a significant and negative direct effect on dividend payout. Thus, when TSII are present and ownership is concentrated, firms pay less dividends in line with the dividend-aversion of TSII. Above all, we find evidence of significant mediating effects of *ECB* and *Stock_options* on dividend payout. For example, in Column [2], the coefficient of *Tax_sensitivity x Ownership_concentration* on *Stock_options* is 0.142 and the coefficient of *Stock_options* on *Dividends* is -0.009. Both coefficients are significant at the 5 percent level and give rise to an indirect coefficient of *Tax_sensitivity x Ownership_concentration* on *Dividends*, that is equal to -0.001 and it is significant at 10 percent level. Notably, the indirect coefficient is not statistically significant in Column [3], where we consider *Stock_holdings* in line with our previous findings.

Dividend payout is not the only way through which firms can pay back their shareholders. Firms can also decide to pay back shareholders using stock repurchases either in the open market or through tenders. Stock repurchases give TSII the flexibility they need to maximize their portfolio returns while minimizing the tax burden of their clients. Indeed, if the firm decides to repurchase its shares in the open market, TSII may choose to sell shares and realize capital gains if they need. We expect tax sensitive investors to prefer stock repurchases over dividends in order to take

¹⁶ In additional analyses, we re-run path analysis dividing ordinary stock divided by market value of equity at the end of the year and results hold.

advantage of the flexibility this provides to their portfolio rebalance. Moreover, as stock repurchases lead to a reduction of the number of outstanding shares, stock options will be more valuable after the stock repurchase is announced (Jolls, 1998).

We re-run the path analysis substituting dividends with stock repurchases. Stock repurchases are measured as the total dollar amount of repurchased common stock during the year, as reported in the statement of cash flows, divided by market capitalization at the end of the year¹⁷. Also in this case we consider stock repurchases at time (t+1). Empirical evidence is reported for Table 6 Panel B. Columns [1], [2] and [3] show the findings for *ECB*, *Stock_options* and *Stock_holdings*, respectively.

In this case, the direct effect of *Tax_sensitivity x Ownership_concentration* on stock repurchases is positive and statistically significant only in Column [3]. Notably, we find evidence of a significant mediating effect of *Stock_options* on stock repurchases in Column [2]. Both the coefficient of *Tax_sensitivity x Ownership_concentration* on *Stock_options* and the coefficient of *Stock_options* on *Repurchases* are positive and statistically significant. Above all, the indirect coefficient of *Tax_sensitivity x Ownership_concentration* on *Repurchases* is equal to 0.001 statistically significant at 10 percent level. Thus, taken together, results from the path analyses suggest that CEO compensation and, in particular, stock options serve as an important channel through which TSII impose their tax preferences for capital gains over dividends. Notably these tax preferences are reflected into firm's tendency to pay less dividends and make more stock repurchases.

INSERT TABLE 6 HERE

¹⁷ We obtain similar evidence using an alternative measure of stock repurchases, computed as the total dollar amount of repurchased common and preferred stock during the year divided by the market capitalization at the end of the year; replacing amounts lower than 1% with 0. Moreover, in additional untabulated analyses we use a system of two equations as an alternative model specification for the path analysis obtaining the same evidence.

Impact on investment efficiency

So far, we have documented that, when ownership is concentrated, TSII use stock options to lower dividend payout and better satisfy the tax preferences of their clients. In our theoretical premise, we argued that the lower dividend payout is not costless as managers can use the greater internal resource available to overinvest in negative NPV projects that maximize their personal wealth at expense of shareholders. Thus, the potential for managers' misbehaviours is the cost TSII bear when they decide to grant more stock options to minimize dividend payout. We also posited that managers are less likely to overinvest when ownership is more concentrated as, in this situation, TSII can exert a strong monitoring over managers curbing opportunistic behaviours. As both conjectures are crucial for our mechanism to hold, we test whether investment efficiency is negatively associated with dividend payout and positively related with TSII. Above all, we investigate the role of dividends in the relation between investment efficiency and TSII to unravel whether the lower dividend payout induced by TSII leads to an unwanted wealth loss. To this end, we perform a SEM of the direct effect of TSII on investment efficiency and its indirect effect through dividend payout.

We measure investment efficiency following Biddle et al. (2009) considering both total investments (sum of capital expenditures and R&D expenses divided by total assets at the beginning of the year) as well as its sub-components. Specifically, we estimate a regression model where investments at time $(t+1)$ are regressed on growth opportunities (as measured by sales growth) for each industry-year based on the first two digits SIC for all industries with at least 20 observations in a given year. We use the residuals as a measure of firm-specific deviation from predicted investment. Then, we sort firms yearly based on the residuals into quartiles. Firm-year

observations in the bottom quartile are classified as under-investing, observations in the top quartile are classified as over-investing, and observations in the middle two quartiles are classified as the benchmark group. Given that, after having replicating the SEM used in Table 6, we estimate a multinomial logit model that predicts the likelihood that a firm will be in one of the extreme quartiles as opposed to the middle quartiles. Empirical evidence is reported in Table 7 Panel A for overinvestment and Table 7 Panel B for underinvestment. In both cases, Columns [1] show the results for total investments, Columns [2] for capital expenditures and Columns [3] for R&D.

Looking at Table 7 Panel A, we observe that the coefficient for *Dividends* is negative and statistically significant in Columns [1] and [2] thus suggesting that firms paying less dividends are more likely to overinvest in core assets in line with the disciplining role of dividend payout. At the same time, we find that the coefficient for *Tax_sensitivity x Ownership_concentration* is negative and statistically significant in Column [2] where capital expenditures are considered. This result confirms our conjecture that, when TSII hold a dominant stake, they more closely monitor managers avoiding opportunistic behaviours such as overinvestment. Interestingly, the indirect effect *Tax_sensitivity x Ownership_concentration* on overinvestment in capital expenditures is 0.3078 and significant at 5% level suggesting that the lower dividend payout induced by TSII has the unwanted effect of increasing overinvestment. However, the sum of the direct and indirect effect of *Tax_sensitivity x Ownership_concentration* is still negative (-3.5785) and significant at 5% level suggesting that the monitoring exerted by dominant TSII limits the potential wealth loss due to lower dividends.

Notably, we do not find similar evidence when overinvestment in R&D is considered and, above all, in Table 7 Panel B where we focus on underinvestment. In this case, the coefficient for *Dividends* is not statistically significant in any specification. Instead, the coefficient for

Tax_sensitivity x Ownership_concentration is negative and statistically significant in Column [2] while it is positive and statistically significant in Column [1]. The indirect effects of *Tax_sensitivity x Ownership_concentration* on underinvestment are also not statistically significant suggesting that dividends do not play a role in the association between TSII and underinvestment. Thus, we do not find conclusive evidence on the effect of TSII on underinvestment problems, both directly and indirectly. The lack of conclusive evidence is consistent with the results for the placebo test relative to the level of investments and, hence, excludes that our findings are due to TSII preference for firms with low growth patterns.

Out-of-the-money and in-the money stock options

In our main analyses, we did not consider whether stock options held by CEOs are in-the-money (firm's stock price is greater than the option price) or out-of-the-money (firm's stock price is greater than the option price). However, this distinction is relevant because it can affect CEOs' incentives to distribute dividends. Indeed, Lambert et al. (1989) point out that the negative association between stock options and dividend payout is stronger when stock options are more likely to be in-the-money as in this case executives will lose more if they announce dividends. At the same time, if stock options are in-the-money, the likelihood that managers will exert them is higher.¹⁸ Once the stock options are exercised, managers become shareholders of the firm and,

¹⁸ In order to corroborate both arguments and verify if these mechanisms occur in our sample, we perform two additional tests. First, we verify the argument of Lambert et al. (1989) that CEOs pay less dividends when their stock options are in-the-money. We find evidence consistent with this claim. We also document that the negative association is stronger in presence of TSII. Then, we inspect whether CEOs are less likely to exercise stock options in the future if they receive more stock options at time (t). In untabulated evidence, we observe that CEOs with in-the-money stock options report a higher percentage of exercised options at time (t+1), but the positive association is attenuated if at time (t), CEOs receive more stock options. Lastly, we find some evidence that, when the percentage of exercised options is higher and the firm reports higher ROA, dividend payout is higher. Taken together, these results confirm that, when stock options are in-the-money, CEOs pay less dividends but they are also more likely to exercise the stock options in the future. This can lead to a higher dividend payout if the firm has enough profits to do so at expense of TSII. Above all, we observe that granting more stock options at time (t) can attenuate CEOs' incentives to exercise the stock options thus reducing the probability of a subsequent dividend payout.

hence, they may be less reluctant to pay dividends. We contend that TSII will take actions to dampen the risk that CEOs will pay more dividends once the in-the-money are exercised. In particular, we expect that, when CEOs hold more in-the-money stock options, TSII will include more stock options in CEOs' compensation to restore managers' reluctance to pay dividends. In this way, TSII ensure that part of CEOs' wealth is at risk if dividends are announced.

We define in-the-money stock options by considering the value per vesting option (i.e., value of CEO stock options that are exercisable but they have not been exercised divided by the number of CEO stock options that are exercisable but they have not been exercised), divided by the average strike price (i.e., stock price at the end of the year and the value per vested option)¹⁹. We take the sample-median value to determine CEOs with out-of-the-money (value per vesting option lower than the median value) and in-the-money stock options (value per vesting option higher than the median value). Then, we re-run Eq. (1) and Eq. (2) in each subsample to verify that our results hold and they are stronger when CEOs hold more in-the-money stock options. Empirical evidence is reported in Table 8 Panel A for H1a and H1b, and in Table 8 Panel B for H2. Columns [1] and [2] show the results for *ECB* when stock options are out- and in-the-money, respectively. Columns [3] and [4] report the findings for *Stock_options* when stock options are out- and in-the-money, respectively. Lastly, Columns [5] and [6] show the evidence for *Stock_holdings* for out- and in-the-money stock options, respectively.

In Table 8 Panel A, we observe that *Tax_sensitivity* is positively and significantly associated with equity-based compensation and stock options only when the CEO holds in-the-money stock options (Columns [2] and [4]). Instead, the coefficient for *Tax_sensitivity* is not statistically significant when stock options are out-of-the money. Although the coefficients are not statistically

¹⁹This measure has been used in prior studies on CEOs' overconfidence (Campbell et al., 2011) and it indicated how far the value per vested option is with respect to the strike price.

different between the two subsamples, this evidence suggests that our main findings are driven by cases in which CEOs hold in-the-money stock options and TSII grant stock options to keep the interest alignment.

A similar pattern emerges in Table 8 Panel B where our coefficient of interest is the interaction term *Tax_sensitivity* \times *Ownership_concentration*. In all specifications, the coefficient for *Tax_sensitivity* \times *Ownership_concentration* is positive and statistically significant only when the stock options are in-the-money (Columns [2], Column [4], Columns [6]). When stock options are out-of-the money (Columns [1], Column [3], Columns [5]), the coefficient is not statistically significant at conventional levels. Notably, the coefficients are statistically different in Columns [1] and [2] (at 1 percent level), and in Columns [3] and [4] (at 10 percent level). Thus, in line with empirical evidence reported in Table 8 Panel A, we observe that our findings arise when CEOs hold in-the-money stock options and TSII perceive a high risk that, in the future, CEOs will exercise the stock options and, as a result, they will be eager to pay dividends. In an attempt to restore CEOs' reluctance to pay dividends, TSII grant them more stock options ensuring that part of their wealth can be lost if dividends are announced.

INSERT TABLE 8 HERE

The American Taxpayer Relief Act (ATRA) of 2012

Tax_sensitivity is not an exogenous variable, as TSII decide to invest in firm with specific characteristics (Blouin et al., 2017) that can in turn affect executives' compensation packages. In an attempt to attenuate endogeneity concerns, we examine whether and how our findings change when a tax reform takes place. In particular, we exploit the American Taxpayer Relief Act (ATRA) of 2012 that occurred during our sample period and introduced the possibility for an additional

medical care taxation for all income brackets. The ATRA created a new top marginal tax rate bracket at 39.6% (while the top marginal tax rate until 2012 was 35%) and increased capital gain taxes (at the top bracket) from 15% to 20%. An additional Net Investment Income Tax (NIIT) was imposed by section 1411 of the Internal Revenue Code. The NIIT applies at a rate of 3.8% to certain net investment income of individuals, estates and trusts that have income above the statutory threshold amounts.

We contend that the introduction of the additional medical care taxation increased the tax-sensitivity of low-wealth individuals attenuating the differences in tax sensitivity of the clientele of institutional investors. To corroborate this assumption, we analyse the association between tax-sensitive investors and stock repurchases before and after the 2012 Tax Reform. In previous analyses, we have documented that stock repurchases are larger when tax sensitive are present and they are better able to impose their preferences for capital gains. If the ATRA increased the tax sensitivity of low-wealth individuals, we should expect that the positive association between tax sensitivity and stock repurchase is weaker in the period after 2013 as tax-insensitive investors are more likely to behave like tax-sensitive investors. Graph 1 shows the association in the period before (blue line) and after (green line) the ATRA. Consistent with our conjecture, we observe that the positive association between tax ownership and stock repurchases is flatter after 2013. This is in line with the idea that after 2013, the ATRA made the non-tax sensitive investors more tax-sensitive so that the differences are attenuated. Notably, we observe that after 2013 stock repurchases are greater in firms with lower tax ownership, while the opposite pattern occurs in firms with higher tax ownership.²⁰

INSERT GRAPH 1 HERE

²⁰ These results are confirmed by formal t-tests. Notably, we do not observe similar changes for dividend payout.

After having documented that the 2012 Tax Reform reduced the differences between tax-sensitive and tax-insensitive investors, we replicate our analyses for H1 and H2 by splitting the sample in the period before and after 2013. Empirical evidence is reported in Table 9, Panel A for H1a and H1b, and in Table 9 Panel B for H2.

In Table 9 Panel A, we observe that the coefficient for *Tax_sensitivity* is positively and significantly associated with stock options both in the period before (Column [1]) and after 2013 (Column [2]). We observe a similar pattern when we consider equity-based compensation in Columns [3] and [4]. In both cases, the coefficients are not statistically different between the two periods. Lastly, we fail to find evidence that stock holdings are associated with tax-sensitive institutional investors in line with the evidence for the full sample. Thus, taken together, results reported in Table 9 Panel A suggest that the positive relation between stock options and tax-sensitive investors did not change after the ATRA.

Then, we consider results reported in Table 9 Panel B relative to H2. In Columns [1] and [2], where results for stock options are reported, we find that the coefficient for *Tax_sensitivity x Ownership_concentration* is positive and statistically significant at the 1 percent level in the period before 2013 (Column [1]) while it is not statistically significant at conventional levels in the period after 2013 (Column [2]). The difference in coefficients is statistically significant at the 10 percent level. Thus, the positive coefficient for the interaction term *Tax_sensitivity x Ownership_concentration* we have observed in the full sample is driven by the period before 2013 when the differences in tax-sensitivity of the clientele of institutional investors were more pronounced. Notably, we observe a diverse behaviour of tax-sensitive investors between the two periods only when we account for the ownership concentration of the firm in which they invest.

This result suggests that the 2012 Taxes reform plays a role when ownership is more concentrated and TSII can better impose their peculiar preferences. In the period before 2013, the preferences of tax-sensitive investors are unlike those of tax-insensitive investors so that, when they have the power to imprint them, more stock options are observed. In the period after 2013, the differences fade and, as a result, we fail to observe a significant effect of tax-sensitive investors on stock options both in isolation and combined with ownership concentration.

We do not observe a similar evidence in Columns [3] and [4], and Columns [5] and [6], where equity-based compensation and stock holdings are considered. The coefficient for *Tax_sensitivity* \times *Ownership_concentration* is positive and statistically significant at the 1 percent level both before and after 2013. However, the difference is not statistically significant. The evidence that the 2012 Tax Reform did not affect the association between tax-sensitive investors and other types of equity-based compensations corroborates the results observed for stock options. In particular, it attenuates the concern that findings for stock options are due to an overall adjustment of compensation packages taking place around the 2012 Tax Reform as a result of confounding events²¹.

INSERT TABLE 9 HERE

V. CONCLUSIONS

Building on prior research showing that shareholders impose their preferences and modify firms' actions (Hanlon and Hoopes 2014; Amiran et al. 2019), we investigate whether shareholders impose their tax preferences by influencing the design of firms' executive compensation contracts. We confirm our prediction. Specifically we expect and show a positive association between TSII

²¹ In additional untabulated analyses, we repeat analyses reported in Table 8 and 9 using *Dominant_tax_sensitive* as a proxy for TSII and we obtain similar evidence.

and equity-based compensation with a predominance of stock options. The effect is amplified by ownership concentration. In additional tests, we show that when stock options are part of compensation packages, firms distribute less dividends consistent with our prediction while increasing stock repurchases. This result shows that TSII impose their tax preferences (i.e. capital gains over dividends) by shaping managers' compensation packages of the firms in which they invest to better align interests. This ultimately leads to lower dividend payouts by firms in which TSII are the dominant shareholders, thus, contributing to a more tax efficient management of TSII clientele portfolio. Interestingly, although currently tax rates of long-term capital gains and dividends do not differ, we show that TSII still prefer capital gains to dividends. Since tax payments from dividends depend on managers' payouts decisions, while tax payments on capital gains are determined by institutional investors' trading choices, we attribute this result to the (non) flexibility given by capital gains (dividends) to optimize TSII portfolio and to minimize the overall tax burden for their clients (i.e., non-tax costs following the Scholes-Wolfson framework). In order to rule out alternative channels and dampen endogeneity concerns (e.g. TSII selection of firms with distinct compensation features and/or distinct growth patterns), we have performed a battery of tests that confirm our main conclusions. We recognize that additional analyses may not completely rule out endogeneity concerns and this can represent a potential limitation of the study.

Despite that, we believe that our work has several contributions. To our knowledge, our study is among the first to document the importance of shareholder-level tax preferences on corporate compensation decisions showing one specific channel used by shareholders to impose their tax preferences. In this way, we expand prior literature interested in the heterogeneity among institutional investors and its effect on corporate actions. Furthermore, we show that shareholder-level tax preferences may not only come from differences in tax rates (e.g., dividends and capital

gain tax rates), but also from the different flexibility necessary to optimize institutional investors' portfolios from a tax perspective. In this way, we contribute to the stream of tax literature looking at non-tax costs. Our study also complements the recent study by De Simone, McClure and Stomberg (2020) showing that firms do not change compensation packages after a reduction in the firms' tax advantages for granting stock options by pointing out an alternative important factor to consider at the moment of examining executive's compensation contracts design and their relation with tax issues. Lastly, we aim to better inform regulators on which kind of tax costs and non-tax costs firms consider while designing executives compensation.

REFERENCES

- Acharya, V. V. et al., 2017. www.econstor.eu. *Working Paper*.
- Aghion, P., Van Reenen, J., and Zingales, L. (2013). Innovation and institutional ownership. *American Economic Review*, 103(1), 277-304.
- Armstrong, C.S., Blouin, J.L. and Larcker, D.F., 2012. The incentives for tax planning. *Journal of Accounting and Economics*, 53(1–2), pp.391–411.
- Bartov, E., and Schwartz, L. H. (2017). *Executive Compensation in the Litigation Setting. Litigation Services Handbook: The Role of the Financial Expert*, 1-33.
- Biddle, G.C., Hilary, G., & Verdi, R.S. (2009). How does financial reporting quality improve investment efficiency? *Journal of Accounting and Economics*, 48, 112-131.
- Blouin, J., Bushee, B.J. and Sikes, S., 2017. Measuring Tax-Sensitive Institutional Investor Ownership. *The Accounting Review*, 92(6), pp.49–76.
- Brav, A., Jiang, W., Partnoy, F., and Thomas, R. (2008). Hedge fund activism, corporate governance, and firm performance. *The Journal of Finance*, 63(4), 1729-1775.
- Brickley, J. A., Lease, R. C., and Smith Jr, C. W. (1988). Ownership structure and voting on antitakeover amendments. *Journal of Financial Economics*, 20, 267-291.
- Campbell, T. C., Gallmeyer, M. , Johnson, S. ., Rutherford, J. , and Stanley, B. (2011). CEO optimism and forced turnover. *Journal of Financial Economics* 101, 695–712
- Carleton, W. T., Nelson, J. M., and Weisbach, M. S. (1998). The influence of institutions on corporate governance through private negotiations: Evidence from TIAA-CREF. *The Journal of Finance*, 53(4), 1335-1362.
- Chen, X., Harford, J., and Li, K. (2007). Monitoring: Which institutions matter?. *Journal of Financial Economics*, 86(2), 279-305.
- Chi, S., Huang, S. & Sanchez, J.M., 2017. CEO Inside Debt Incentives and Corporate Tax Sheltering. *Journal of Accounting Research*, 55(4), pp.837–876.
- Coffee, J. C. (1991). Liquidity versus control: The institutional investor as corporate monitor. *Columbia Law Review*, 91(6), 1277-1368.
- Correa, R., & Lel, U. (2016). Say on pay laws, executive compensation, pay slice, and firm valuation around the world. *Journal of Financial Economics*, 122(3), 500-520.
- Desai, M.A. & Dharmapala, D., 2006. Corporate tax avoidance and high-powered incentives. *Journal of Financial Economics*, 79(1), pp.145–179.
- Desai, M. A., and Jin, L. (2011). Institutional tax clienteles and payout policy. *Journal of Financial Economics* 100(1), 68-84.

- De Simone, L., McClure, C., & Stomberg, B. (2020). *Examining the Immediate Effects of Recent Tax Law Changes on the Structure of Executive Compensation*. Kelley School of Business Research Paper, (19-28). Working paper.
- Drucker, Jesse, 2009, "Titans Vow Overseas-Tax Fight," Wall Street Journal, April 22.
- Dyregang, S.D., Hanlon, M. & Maydew, E.L., 2010. The Effects of Executives on Corporate Tax Avoidance. *The Accounting Review*, 85(4), pp.1163–1189.
- Grossman, S. J., and Hart, O. D. (1983). Implicit contracts under asymmetric information. *The Quarterly Journal of Economics*, 123-156.
- Hanlon, M. & Heitzman, S., 2010. A review of tax research. *Journal of Accounting and Economics*, 50(2–3), pp.127–178.
- Hanlon, M., & Hoopes, J. L. (2014). What do firms do when dividend tax rates change? An examination of alternative payout responses. *Journal of Financial Economics*, 114(1), 105-124.
- Harris, M., and Raviv, A. (1979). Optimal incentive contracts with imperfect information. *Journal of Economic Theory*, 20(2), 231-259.
- Hartzell, J.A.Y.C. and Starks, L.T., 2003. Institutional Investors and Executive Compensation. *The journal of finance*, LVIII(6), pp.2351–2374.
- Hölmstrom, B. (1979). Moral hazard and observability. *The Bell Journal of Economics*, 74-91. ICI (2015): Invest company fact book. Investment Company Institute (ICI).
- Janakiraman, S., Radhakrishnan, S., and Tsang, A. (2010). Institutional investors, managerial ownership, and executive compensation. *Journal of Accounting, Auditing & Finance*, 25(4), 673-707.
- Jacob, M., and Michaely, R. (2017). Taxation and dividend policy: the muting effect of agency issues and shareholder conflicts. *The Review of Financial Studies*, 30(9), 3176-3222.
- Jensen, M. C., and Murphy, K. J. (1990). Performance pay and top-management incentives. *Journal of Political Economy*, 98(2), 225-264.
- Jolls, C. (1998). *Stock repurchases and incentive compensation*. Working paper (No. w6467). National Bureau of Economic Research (Accessed: July, 2020).
- Khurana, I. K., & Moser, W. J. (2013). Institutional shareholders' investment horizons and tax avoidance. *The Journal of the American Taxation Association*, 35(1), 111-134.
- Krupa, T., & Utke, S. (2019). Whose Taxes Matter?: *The Effects of Institutional Ownership on Dividend Payout Policy Around Tax Rate Changes*. Working paper (Accessed: January, 2019).
- Lambert, R.A., Lanen, W.N., & Larcker, D.F. (1989). *Executive stock option plans and corporate dividend policy*. *Journal of Financial and Quantitative Analysis* 24, 409-425.

- Matsunaga, S., Shevlin, T. and Shores, D., 1992. Disqualifying dispositions of incentive stock options: Tax benefits versus financial reporting costs. *Journal of Accounting Research* 37-68.
- Monks, R., and N. Minow. 1995. *Corporate Governance*. Cambridge, MA: Blackwell.
- Ramalingegowda, S., and Yu, Y. (2012). Institutional ownership and conservatism. *Journal of Accounting and Economics*, 53(1-2), 98-114.
- Rego, S.O. and Wilson, R., 2012. Equity Risk Incentives and. *Journal of Accounting Research* 50(3), pp.775–810.
- Shleifer, A., and Vishny, R. W. (1986). Large shareholders and corporate control. *Journal of Political Economy* 94(3, Part 1), 461-488.
- Shleifer, A., and Vishny, R. W. (1997). A survey of corporate governance. *The Journal of Finance*, 52(2), 737-783.
- Sikes, S. A. (2014). The turn-of-the-year effect and tax-loss-selling by institutional investors. *Journal of Accounting and Economics*, 57(1), 22-42.

APPENDIX A

Anecdotal evidence of tax efficiency strategies by institutional investors

We categorize institutional investors into tax sensitive (TSII) or tax insensitive (NTSII) using the definition specified by Desai and Jin (2011). To gain further confidence on our proxy and fully understand the TSII investment strategies, we manually check their websites. For this task, we use the TSII that we get from the first step of the process.

Examples of TSII include institutional investors as *Kayne Anderson Rudnick Investment Management LLC.*, *Bainco International Investors* and *Lenox Wealth Management, Inc.* By looking at their websites, we find that these institutional investors do not belong to the largest institutional investors, being on average, small institutions. They have a strong focus on a customized and dynamic portfolio management based on their client's needs, which indicates a very active approach. Most of the institutional investors highlight the close personal attention they provide to their clients and link their investment strategy to a very detailed and careful research. Further, they point out the long-term orientation they have as an investment strategy and in many cases have a direct mention to investment tax efficiency. The long-term orientation by TSII is closely linked to tax efficiency of the investments trying to avoid short-term capital gain taxes. Examples of TSII Websites:



Kayne Anderson Rudnick
Wealth Advisors

TAX EFFICIENCY

TAXES ARE A SIGNIFICANT PART OF ONE'S FINANCES. When it comes to investing, it's not only about how much one makes in appreciation and income, but also how much one keeps after taxes.

The good news: Kayne Anderson Rudnick strategies keep taxes in mind. While taxes aren't and shouldn't be the sole basis on which an investment decision is made, we closely look for and act on opportunities to manage and reduce taxes as much as possible, with the goal of helping to protect your wealth and maximize the tax efficiency of your investments.

Among the most important factors determining the tax efficiency of a portfolio is turnover. The turnover ratio is the frequency with which the portfolio buys and sells securities. High turnover is likely to result in short-term gains, which are taxable at ordinary income rates rather than long-term capital gains rates. The turnover rates of some of KAR's largest equity strategies have been significantly lower than those of comparable averages, as shown below:



Data is obtained from FactSet Research Systems and is assumed to be reliable. Past performance is no guarantee of future results. Universe indices from eVestment.



PERSONALIZED SERVICE

Understanding your specific needs is the first step towards a successful partnership and before beginning to invest we make sure we have grasped your key concerns and financial situation. [Read More](#)

The portfolio we design for you will reflect your specific goals, risk tolerance and investment horizon. These considerations will also inform the long term financial planning that we offer our clients at no extra charge. Client service is our top priority based on clear communication and frequent interaction. In depth reporting and responsiveness to your evolving circumstances are essential aspects of our service.

ACTIVE MANAGEMENT

We are active managers, focused on asset allocation and security selection. Asset allocation is based on our analysis of macro-economic and market trends and the careful positioning of our portfolios to reflect these realities. [Read More](#)

The process by which we select the individual securities and mutual funds that make up our portfolios is meticulous. We believe the fund managers represented in our client portfolios are among the finest in the investment business. Our goal is to generate strong long-term returns while paying close attention to risk.

CONSISTENCY

We believe that a solid investment plan and a disciplined approach are the single biggest factors in successful investing. We help our clients to remain focused on their goals and not to succumb to short term decisions based on media headlines or market volatility. [Read More](#)

CORE PRINCIPLES

We have learned from experience that a successful investment experience requires:

- Appropriate allocations to stocks, bonds & alternative asset classes
- Broad diversification to capture opportunities and reduce risks
- In-depth investment research
- Close attention to costs and taxes
- Disciplined management
- Patience, perspective and a focus on long term goals

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[FAQ](#)

Insurance and Risk Manage **APF** Investment Management X +

https://www.bdfllc.com/our-services/investment-management/

your portfolio.

Asset Placement

All investments are not treated the same from a tax perspective. You must consider which account you use to purchase your investments in order to reduce the impact of taxes on the performance of your portfolio. After-tax returns is what counts!

Rebalancing

It's the beginning of the year, time to start fresh and rebalance, right? Not at all! Rebalancing is a prudent approach to managing the risk you are taking on, but there's a better way than just rebalancing because the calendar told you to. Our approach takes into account the daily movement of all assets you invest in to see IF it makes sense to rebalance based upon actual performance, rather than the calendar.

Low Expenses

There's one thing that is certain with investments, and that is costs. Keeping these as low as possible, while being mindful of the exposure you get, is key to enhancing long-term returns. At BDF, we have access to institutional shares which have lower expenses, further driving down your costs.

Withdrawal Strategies

You've created wealth for a reason, and at some point you're going to want to use it. But where do you start? Organizing a withdrawal plan, and taking out money in the most cost-effective, tax-sensitive way, adds to your bottom line. BDF is here to ensure you spend money on what you want, not on needless taxes.

Ready to take the next step?

CONTACT US

www.apriem.com/the-apriem-experience/history-of-apriem/

The Apriem Experience Client Services Team Client Resources WOW Apriem Cares Newsroom

Angeles and San Diego counties. In 2018, Apriem celebrated its 20th anniversary by renewing its commitment to serving clients to highest degree and launching the **Apriem Cares** program to further strengthen and empower communities at every level.

Relationships & Purpose: The Apriem Approach

Apriem had a clear vision for a new private firm — it included excellence in service, integrity, and advice built on two important pillars: relationships and purpose. Clients come first, and each wealth and portfolio manager is dedicated to engaging clients and developing real, personal relationships with them.

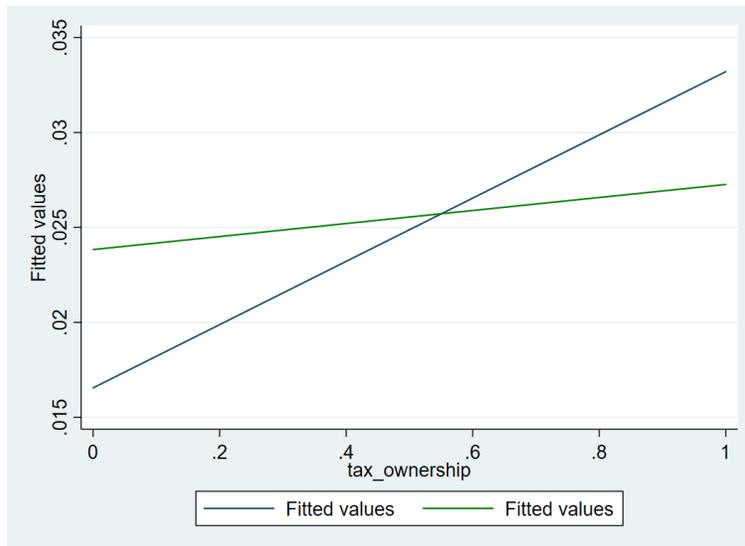
It all starts on a human level — knowing clients' needs and goals which gives purpose and individualizes each financial plan. Being proactive in the investing space — not just reactive to the market — and allowing a margin of time to properly service each client are cornerstones of the company. Apriem's purpose is to manage clients' assets in such an efficient and effective way that clients can get back to the most important business in life — family and friends.

In addition to the unique approach in servicing clients, the way Apriem manages, invests, and even structures fees is fundamentally different than most large financial institutions. For years, these corporations have charged clients each time a transaction is made on their behalf inside a commissionable product. This structure only encourages advisors to continuously move the client's money — whether it is in the best interest of the client or not.

Since the late 1990s, it was on trend to not only charge the client a management fee each month, but also a financial planning fee. However, financial managers were just that, managers — not long-term strategic planners. They charged the clients twice, but only provided one service. Apriem recognized the extreme disconnect of managing money but not understanding the financial goals of a family. A portfolio cannot be balanced without knowing the total picture, including other financial aspects of a family picture such as taxation, asset protection and estate planning. Apriem was an early adaptor of combining the services of financial planning and investment management for one inclusive fee.

Appendix B: Variables description

Variable Name	Definition
<i>Tax_sensitivity</i>	Percentage of ownership held by tax sensitive investors
<i>ECB</i>	Equity risk incentives amount (stock equity and stock options) divided by the total amount of CEO's compensation.
<i>Stock_options</i>	Options to total amount of CEO's compensation.
<i>Stock_holdings</i>	Stocks to total amount of CEO's compensation.
<i>Ownership_concentration</i>	Total concentration of institutional investors as the Hirfindahl-Hirschman score. The sum of the squares of institutional ownership as a percentage of the total ownership.
<i>Istown</i>	Total institutional ownership as the percentage owned by institutional investors to firm's total shares.
<i>CEO Age</i>	CEO's age.
<i>BTM</i>	Book to market ratio.
<i>Return_volatility</i>	Return volatility.
<i>Size</i>	Natural logarithm of total assets.
<i>Pretax_ROA</i>	Pre-tax return on assets.
<i>ROA_Volatility</i>	Standard deviation of <i>Pre-tax ROA</i> over the previous five years.
<i>LEV</i>	Total debt (DLTT+DLC) scaled by beginning of year total assets (AT).
<i>Tot_inv_alt</i>	Total investment in R&D and firm's capital expenditures, scaled by firm's total assets.
<i>R&D</i>	R&D expense (XRD) scaled by beginning of year total assets (AT).
<i>DA</i>	DA calculated using performance-adjusted modified Jones model (Kothari et al., 2005)
<i>Geo_Complexity</i>	Estimated as the revenue-based Hirfindahl-Hirschman indices calculated as the sum of the squares of each geographic segment's sales as a percentage of the total firm sales as described in Bushman et al. (2004).
<i>CEO Cash Comp</i>	CEO salary plus bonus compensation.



Graph 1: Relation between tax sensitivity and stock repurchases before and after the 2012 Tax Reform

TABLE 1 - Descriptive Statistics

<i>Variable</i>	<i>N</i>	<i>Mean</i>	<i>sd</i>	<i>p25</i>	<i>p50</i>	<i>p75</i>
Tax_sensitivity	4985	0.109	0.279	0.000	0.004	0.025
ECB	4985	0.497	0.249	0.366	0.550	0.677
Stock_options	4985	0.165	0.200	0.000	0.106	0.280
Stock_holdings	4985	0.332	0.258	0.042	0.337	0.531
Ownership_concentration	4985	0.532	0.458	0.044	0.617	1,000
Istown	4985	0.409	0.519	0.001	0.007	0.831
CEO_age	4982	56,569	7.199	52,000	56,000	61,000
BTM	4985	0.398	4.164	0.244	0.403	0.621
Return_volatility	4985	0.080	0.044	0.051	0.071	0.098
Size	4985	7.745	1,630	6,560	7,649	8,785
Pretax_ROA	4985	0.079	0.103	0.037	0.080	0.128
ROA_Volatility	4985	0.065	0.066	0.024	0.045	0.081
LEV	4985	0.236	0.219	0.058	0.204	0.340
Tot_inv_alt	4985	0.078	0.066	0.033	0.060	0.105
R&D	4985	0.036	0.060	0.000	0.011	0.049
DA	4985	-0.014	0.054	-0.044	-0.014	0.016
GEO_Complexity	4985	0.565	0.320	0.322	0.521	0.822
CEO_Cash_Comp	4985	7,452	0.971	6,971	7,498	8,005

This table reports descriptive statistics for the variables used in the main analyses. All variables are described in Appendix B.

Table 2: Tax sensitivity and CEO compensation

VARIABLES	(1) ECB	(2) Stock_options	(3) Stock_holdings
Tax_sensitivity	0.0348*** (0.0116)	0.0328*** (0.0112)	0.0019 (0.0134)
Istown	0.0208*** (0.0068)	0.0104 (0.0066)	0.0104 (0.0076)
CEO_age	0.0276*** (0.0051)	0.0065** (0.0033)	0.0212*** (0.0050)
CEO_age_sq	-0.0003*** (0.0001)	-0.0001** (0.0001)	-0.0002*** (0.0001)
BTM	-0.0016*** (0.0002)	-0.0006*** (0.0002)	-0.0009*** (0.0001)
Return_volatility	-0.266*** (0.0962)	-0.0961 (0.0724)	-0.169* (0.0995)
Size	0.0409*** (0.0038)	0.0083*** (0.0025)	0.0326*** (0.0036)
Pretax_ROA	-0.0510 (0.0401)	0.0288 (0.0329)	-0.0798*** (0.0395)
ROA_Volatility	-0.0664 (0.0611)	-0.0886* (0.0485)	0.0221 (0.0640)
LEV	0.0428** (0.0170)	0.0031 (0.0141)	0.0397** (0.0180)
Tot_inv_alt	0.399*** (0.0950)	0.0480 (0.0758)	0.351*** (0.104)
R&D	0.251** (0.107)	0.176* (0.0959)	0.0751 (0.127)
DA	-0.359*** (0.0661)	-0.0900 (0.0548)	-0.269*** (0.0682)
GEO_Complexity	-0.0425*** (0.0122)	-0.0391*** (0.0100)	-0.0034 (0.0129)
CEO_Cash_Comp	0.0189*** (0.0071)	0.0029 (0.0038)	0.0159*** (0.0059)
Year and Industry FE	Yes	Yes	Yes
Observations	4,985	4,985	4,985
R-squared	0.201	0.092	0.141

This table shows the results for the estimation of OLS regression model of CEO compensation on tax sensitivity. Column (1) shows the findings using equity-based compensation as dependent variable (ECB). Column (2) shows the findings using stock options while Column (3) displays the results for stock holdings. All the dependent variables are taken at time (t+1). Control variables are described in Appendix B. We also include industry and time fixed effects. As a result, the constant is not reported. Robust standard errors are reported in parentheses. Significance levels: *** <0.01; ** <0.05; * 0.1.

Table 3: Tax sensitivity and CEO compensation - the role of ownership structure

VARIABLES	(1)	(2)	(3)
	ECB	Stock_options	Stock_holdings
Tax_sensitivity	-0.435*** (0.0915)	-0.0999 (0.0664)	-0.335*** (0.0888)
Ownership_concentration	0.0191 (0.0147)	0.0220* (0.0123)	-0.0029 (0.0151)
Tax_sensitivity x Ownership_concentration	0.493*** (0.0936)	0.138** (0.0692)	0.355*** (0.0921)
Istown	0.0391*** (0.0129)	0.0273** (0.0118)	0.0119 (0.0133)
CEO_age	0.0278*** (0.0051)	0.0066** (0.0033)	0.0212*** (0.0051)
CEO_age_sq	-0.0003*** (0.0001)	-0.0001*** (0.0001)	-0.0002*** (0.0001)
BTM	-0.0015*** (0.0003)	-0.0006*** (0.0002)	-0.0009*** (0.0001)
Return_volatility	-0.254*** (0.0955)	-0.0938 (0.0727)	-0.161 (0.0993)
Size	0.0446*** (0.0037)	0.0092*** (0.0025)	0.0355*** (0.0036)
Pretax_ROA	-0.0427 (0.0395)	0.0287 (0.0334)	-0.0714* (0.0392)
ROA_Volatility	-0.0710 (0.0610)	-0.0939* (0.0487)	0.0230 (0.0640)
LEV	0.0369** (0.0169)	0.0012 (0.0141)	0.0357** (0.0180)
Tot_inv_alt	0.378*** (0.0951)	0.0368 (0.0758)	0.341*** (0.104)
R&D	0.268** (0.107)	0.181* (0.0962)	0.0869 (0.126)
DA	-0.340*** (0.0658)	-0.0823 (0.0547)	-0.258*** (0.0680)
GEO_Complexity	-0.0435*** (0.0121)	-0.0396*** (0.0100)	-0.0039 (0.0129)
CEO_Cash_Comp	0.0147** (0.0068)	0.0016 (0.0038)	0.0131** (0.0059)
Year and Industry FE	Yes	Yes	Yes
<i>Linear combination of coefficients</i>	<i>0.057***</i>	<i>0.038***</i>	<i>0.019</i>
Observations	4,985	4,985	4,985
R-squared	0.210	0.094	0.144

This table shows the results for the estimation of OLS regression model of CEO compensation on tax sensitivity and its interaction term with ownership concentration. Column (1) shows the findings using equity-based compensation as dependent variable (ECB). Column (2) shows the findings using stock options while Column (3) displays the results for stock holdings. All the dependent variables are taken at time (t+1). Control variables are described in Appendix B. We also include industry and time fixed effects. As a result, the constant is not reported. Robust standard errors are reported in parentheses. Significance levels: *** <0.01; ** <0.05; * 0.1.

Table 4: Tax sensitivity, ownership concentration and stock illiquidity

VARIABLES	(1) Bid-ask spread	(2) Bid-ask spread
Tax_sensitivity	0.0001** (0.0001)	0.0018*** (0.0005)
Ownership_concentration		-0.0007*** (0.0001)
Tax_sensitivity x Ownership_concentration		-0.0017*** (0.0005)
Istown	-0.0003*** (0.0001)	-0.0008*** (0.0001)
BTM	0.0001 (0.0001)	0.0001 (0.0001)
Return_volatility	0.0036*** (0.0011)	0.0036*** (0.0011)
Size	-0.0004*** (0.0001)	-0.0004*** (0.0001)
Pretax_ROA	-0.0039*** (0.0005)	-0.0038*** (0.0004)
ROA_Volatility	0.0006 (0.0005)	0.0008 (0.0005)
LEV	-0.0004** (0.0002)	-0.0003** (0.0002)
Tot_inv_alt	-0.0039*** (0.0008)	-0.0038*** (0.0008)
R&D	0.0015 (0.0011)	0.0015 (0.0011)
DA	0.0022*** (0.0007)	0.0020*** (0.0007)
GEO_Complexity	0.0001 (0.0001)	0.0001 (0.0001)
CEO_Cash_Comp	0.0051*** (0.0006)	0.0055*** (0.0006)
Year and Industry FE	Yes	Yes
Observations	5,155	5,155
R-squared	0.192	0.203

This table shows the results for the estimation of OLS regression model of stock illiquidity on tax sensitivity and ownership concentration. Column (1) shows the findings for the main effect of tax sensitivity. Column (2) shows the findings for the interaction term between tax sensitivity and ownership concentration. Stock illiquidity is proxied by bid-ask spread, measured as the yearly median bid-ask spread. Control variables are described in Appendix B. We also include industry and time fixed effects. As a result, the constant is not reported Robust standard errors are reported in parentheses. Significance levels: *** <0.01; ** <0.05; * 0.1.

Table 5: Dominant TSII**Panel A: H1**

VARIABLES	(1) ECB	(2) Stock_options	(3) Stock_holdings	(4) ECB	(5) Stock_options	(6) Stock_holdings
Dominant_tax_sensitive	-0.015 (0.009)	0.007 (0.008)	-0.023** (0.009)	0.001 (0.011)	0.026** (0.011)	-0.025** (0.012)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year and Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Entropy balance	No	No	No	Yes	Yes	Yes
Observations	4,985	4,985	4,985	4,598	4,598	4,598
R-squared	0.201	0.090	0.142	0.240	0.083	0.194

Panel B: H2

VARIABLES	(1) ECB	(2) Stock_options	(3) Stock_holdings	(4) ECB	(5) Stock_options	(6) Stock_holdings
Dominant_tax_sensitive	-0.099*** (0.018)	-0.036*** (0.013)	-0.063*** (0.019)	-0.074*** (0.021)	-0.026 (0.016)	-0.048** (0.022)
Ownership_concentration	0.029** (0.015)	0.023** (0.012)	0.006 (0.015)	0.077*** (0.029)	0.030 (0.021)	0.047 (0.030)
Dominant_tax_sensitive x Ownership_concentration	0.138*** (0.023)	0.072*** (0.019)	0.066*** (0.025)	0.131*** (0.028)	0.089*** (0.025)	0.043 (0.031)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year and Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Entropy balance	No	No	No	Yes	Yes	Yes
<i>Linear combination of coefficients</i>	<i>0.039***</i>	<i>0.036***</i>	<i>0.003</i>	<i>0.057***</i>	<i>0.063***</i>	<i>-0.006</i>
Observations	4,985	4,985	4,985	4,598	4,598	4,598
R-squared	0.209	0.095	0.143	0.267	0.098	0.199

This table shows the results for the estimation of OLS regression model of CEO compensation on tax sensitivity and its interaction term with ownership concentration using *Dominant_tax_sensitive* as proxy for TSII. *Dominant_tax_sensitive* is a dummy variable equal to 1 if Tax_sensitivity is greater than 5 percent, and 0 otherwise. Panel A reports the findings for H1 while Panel B displays the results for H2. Column (1) and (4) show the findings using equity-based compensation as dependent variable (ECB). Column (2) and (5) show the findings using stock options while Column (3) and (6) display the results for stock holdings. All the dependent variables are taken at time (t+1). Results included in Columns (4), (5) and (6) are estimated using an entropy balance procedure where observations with and without dominant TSII (*Dominant_tax_sensitive* is equal to 0 and 1, respectively) are matched using the control variables used in Table 3. Control variables are described in Appendix B. We also include industry and time fixed effects. As a result, the constant is not reported. Robust standard errors are reported in parentheses. Significance levels*** <0.01; ** <0.05; * 0.1.

Table 6: Path Analysis**Panel A: Impact on dividends**

	(1) Dividends Mediating variable: ECB	(2) Dividends Mediating variable: Stock_options	(3) Dividends Mediating variable: Stock_holdings
Direct Path			
<i>P (Tax_sensitivity x Ownership_concentration, Dividends)</i>	-0.032** (0.014)	-0.035** (0.014)	-0.036*** (0.014)
Mediated Path			
<i>P (Tax_sensitivity x Ownership_concentration, CEO compensation)</i>	0.498*** (0.079)	0.142** (0.066)	0.357*** (0.086)
<i>P (CEO compensation, Dividends)</i>	-0.009*** (0.002)	-0.009*** (0.003)	-0.002 (0.002)
<i>P (Tax_sensitivity x Ownership_concentration, CEO compensation) x P (CEO compensation, Dividends)</i>	-0.004** (0.001)	-0.001* (0.001)	-0.001 (0.001)
Controls	Yes	Yes	Yes
Year and Industry FE	Yes	Yes	Yes
Observations	4,968	4,968	4,968

Panel B: Impact on Repurchases

	(1) Repurchases Mediating variable: ECB	(2) Repurchases Mediating variable: Stock_options	(3) Repurchases Mediating variable: Stock_holdings
Direct Path			
<i>P (Tax_sensitivity x Ownership_concentration, Repurchases)</i>	0.021 (0.014)	0.021 (0.014)	0.023* (0.014)
Mediated Path			
<i>P (Tax_sensitivity x Ownership_concentration, CEO compensation)</i>	0.474*** (0.079)	0.157** (0.067)	0.316*** (0.086)
<i>P (CEO compensation, Repurchases)</i>	0.003 (0.003)	0.008*** (0.003)	-0.002 (0.002)
<i>P (Tax_sensitivity x Ownership_concentration, CEO compensation) x P (CEO compensation, Repurchases)</i>	0.001 (0.001)	0.001* (0.001)	-0.001 (0.001)
Controls	Yes	Yes	Yes
Year and Industry FE	Yes	Yes	Yes
Observations	4,815	4,815	4,815

This table shows the results for the path analysis investigating whether CEO compensation is a mediating variable between TSII and corporate payouts. Panel A reports the findings for dividends, measured as cash dividends divided by total assets. Panel B reports the findings for stock repurchases, measured as the total dollar amount of repurchased common stock during the year, as reported in the statement of cash flows, divided by market capitalization at the end of the year. Both dependent variables are taken at time (t+1). Column (1) shows the estimation results using *ECB* as mediating variable, Column (2) using *Stock_options* and Column (3) using *Stock_holdings*. Control variables are described in Appendix B. We also include industry and time fixed effects. Robust standard errors are reported in parentheses. Significance levels: *** <0.01; ** <0.05; * 0.1.

Table 7: Path Analysis – Investment Efficiency**Panel A: Overinvestment over normal level of investment**

	(1) Capex + R&D	(2) Capex	(3) R&D
Direct Path			
<i>P (Tax_sensitivity x Ownership_concentration, Overinvestment)</i>	0.464 (1.501)	-3.886*** (1.385)	-0.943 (1.621)
Mediated Path			
<i>P (Tax_sensitivity x Ownership_concentration, Dividends)</i>	-0.035** (0.014)	-0.035** (0.014)	-0.035** (0.014)
<i>P (Dividends, Overinvestment)</i>	-4.899** (2.127)	-8.830*** (2.329)	0.428 (1.299)
<i>P (Tax_sensitivity x Ownership_concentration, Dividends) x P (Dividends, Overinvestment)</i>	0.171* (0.103)	0.308** (0.146)	-0.015 (0.047)
Controls	Yes	Yes	Yes
Observations	4,968	4,968	4,968

Panel B: Underinvestment over normal level of investment

	(1) Capex + R&D	(2) Capex	(3) R&D
Direct Path			
<i>P (Tax_sensitivity x Ownership_concentration, Underinvestment)</i>	5.902*** (1.813)	-2.814* (1.468)	2.101 (1.450)
Mediated Path			
<i>P (Tax_sensitivity x Ownership_concentration, Dividends)</i>	-0.035** (0.014)	-0.035** (0.014)	-0.035** (0.014)
<i>P (Dividends, Underinvestment)</i>	-0.865 (1.175)	0.686 (0.950)	1.401 (1.312)
<i>P (Tax_sensitivity x Ownership_concentration, Dividends) x P (Dividends, Underinvestment)</i>	0.030 (0.043)	-0.024 (0.038)	-0.049 (0.051)
Controls	Yes	Yes	Yes
Observations	4,815	4,815	4,815

This table shows the results for the path analysis investigating the impact of dividends on investment efficiency. Investment efficiency is determined according to Biddle et al. (2009). Panel A reports the findings for overinvestment while Panel B reports the findings for underinvestment. Both dependent variables are taken at time (t+1). Column (1) shows the estimation results considering both capex and R&D; Column (2) only considering capex and Column (3) considering R&D. In line with Biddle et al. (2009), we control for *Istown*, *Size*, *Lev*, *BTM*, *ROA_Volatility*, *CFO_sale* (ratio of cash flows from operations to sales), *Loss* (indicator variable equal to one if net income before extraordinary items is negative, and zero otherwise), *Tangibility* (net property, plant and equipment divided by total assets), *Slack* (ratio of cash to PPE), *Z_score* (Altman Z-score), *Operating cycle* (log of receivables to sales plus inventories to COGS multiplied by 360), *Age* (difference between the first year the firm got listed and the current year. Robust standard errors are reported in parentheses. Significance levels: *** <0.01; ** <0.05; * 0.1.

Table 8: In-the-money and out-of-the-money stock options

Panel A: H1						
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
	ECB Out-of-the- money	ECB In-the- money	Stock_ options Out-of-the- money	Stock_ options In-the- money	Stock_ holdings Out-of-the- money	Stock_ holdings In-the- money
Tax_sensitivity	-0.006 (0.018)	0.030** (0.015)	0.020 (0.017)	0.041** (0.018)	-0.026 (0.021)	-0.010 (0.020)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year and Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
<i>P value T-test for Tax_sensitivity</i>	0.125		0.402		0.588	
Observations	1,970	1,970	1,970	1,970	1,970	1,970
R2	0.276	0.231	0.092	0.121	0.201	0.154
Panel B: H2						
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
	ECB Out-of-the- money	ECB In-the- money	Stock_ options Out-of-the- money	Stock_ options In-the- money	Stock_ holdings Out-of- the-money	Stock_ holdings In-the- money
Tax_sensitivity	-0.143 (0.109)	-0.558*** (0.132)	0.073 (0.111)	-0.182 (0.112)	-0.216* (0.119)	-0.376*** (0.133)
Ownership_concentration	0.061*** (0.021)	0.052*** (0.020)	0.041** (0.021)	0.039* (0.022)	0.019 (0.023)	0.013 (0.025)
Tax_sensitivity x Ownership_concentration	0.140 (0.115)	0.606*** (0.133)	-0.058 (0.114)	0.227* (0.117)	0.198 (0.125)	0.379*** (0.137)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year and Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
<i>P value T-test for Tax_sensitivity</i>	0.015**		0.106		0.369	
<i>P value T-test for Tax_sensitivity x Ownership_concentration</i>	0.008***		0.080*		0.329	
Observations	1,970	1,970	1,970	1,970	1,970	1,970
R2	0.282	0.250	0.094	0.126	0.203	0.159

This table investigates the association between CEO compensation and tax sensitivity depending on whether CEOs hold in-the-money and out-of-the-money stock options. We define in-the-money stock options by considering the value per vesting option (i.e., value of CEO stock options that are exercisable but they have not been exercised) divided by the number of CEO stock options that are exercisable but they have not been exercised, divided by the average strike price (i.e., stock price at the end of the year and the value per vested option). Out-of-the-money stock options are those for which the value per vesting option is lower than the median value, while in-the-money stock options are those for which the value per vesting option is higher than the median value.

Panel A shows the results for the estimation of OLS regression model of CEO compensation on tax sensitivity. Columns (1) and (2) show the findings using equity-based compensation as dependent variable when out-of-the money and in-the-money stock options are present, respectively. Columns (3) and (4) shows the findings using stock options when out-of-the money and in-the-money stock options are present, respectively. Columns (5) and (6) display the results for stock holdings when out-of-the money and in-the-money stock options are present, respectively.

Panel B shows the results for the estimation of OLS regression model of CEO compensation on tax sensitivity and its interaction term with ownership concentration. Columns (1) and (2) show the findings using equity-based compensation as dependent variable

when out-of-the money and in-the-money stock options are present, respectively. Columns (3) and (4) shows the findings using stock options when out-of-the money and in-the-money stock options are present, respectively. Columns (5) and (6) display the results for stock holdings when out-of-the money and in-the-money stock options are present, respectively. All the dependent variables are taken at time (t+1). Control variables are described in in Appendix B. We also include industry and time fixed effects. Robust standard errors are reported in parentheses. Significance levels: *** <0.01; ** <0.05; * 0.1.

Table 9: 2012 Tax Reform (ATRA)**Panel A: H1**

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
	Stock_ options Pre 2013	Stock_ options Post 2013	ECB Pre 2013	ECB Post 2013	Stock_ holdings Pre 2013	Stock_ holdings Post 2013
Tax_sensitivity	0.0349** (0.0168)	0.0263* (0.0144)	0.0286* (0.0169)	0.0361** (0.0158)	-0.0063 (0.0185)	0.0098 (0.0188)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year and Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
<i>P-value T-test for Tax-sensitivity</i>	0.6960		0.7465		0.5409	
Observations	2,517	2,468	2,517	2,468	2,517	2,468
R-squared	0.0980	0.0958	0.2006	0.2019	0.1186	0.1429

Panel B: H2

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
	Stock_ options Pre 2013	Stock_ options Post 2013	ECB Pre 2013	ECB Post 2013	Stock_ holdings Pre 2013	Stock_ holdings Post 2013
Tax_sensitivity	-0.225** (0.099)	0.004 (0.088)	-0.549*** (0.137)	-0.318** (0.132)	-0.324** (0.129)	-0.322** (0.126)
Ownership_concentration	0.022 (0.016)	0.016 (0.019)	0.012 (0.017)	0.045 (0.039)	-0.011 (0.019)	0.028 (0.033)
Tax_sensitivity x Ownership_concentration	0.269*** (0.104)	0.023 (0.091)	0.603*** (0.141)	0.372*** (0.135)	0.334** (0.134)	0.350*** (0.131)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year and Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
<i>P-value T-test for Tax_sensitivity</i>	0.085*		0.226		0.992	
<i>P-value T-test for Tax_sensitivity x Ownership_concentration</i>	0.075*		0.236		0.935	
Observations	2,517	2,468	2,517	2,468	2,517	2,468
R-squared	0.103	0.096	0.212	0.210	0.121	0.148

This table investigates the association between CEO compensation and tax sensitivity before and after the 2012 Tax reform.

Panel A shows the results for the estimation of OLS regression model of CEO compensation on tax sensitivity. Columns (1) and (2) show the findings using stock options as dependent variable before and after the 2012 tax reform, respectively. Columns (3) and (4) shows the findings using equity-based compensation before and after the 2012 tax reform, respectively. Columns (5) and (6) display the results for stock holdings before and after the 2012 tax reform, respectively.

Panel B shows the results for the estimation of OLS regression model of CEO compensation on tax sensitivity and its interaction term with ownership concentration. Columns (1) and (2) show the findings using stock options as dependent variable before and after the 2012 tax reform, respectively. Columns (3) and (4) shows the findings using equity-based compensation before and after the 2012 tax reform, respectively. Columns (5) and (6) display the results for stock holdings before and after the 2012 tax reform, respectively.

All the dependent variables are taken at time (t+1). Control variables are described in in Appendix B. We also include industry and time fixed effects. Robust standard errors are reported in parentheses. Significance levels: *** <0.01; ** <0.05; * 0.1.