Offshore expertise for onshore companies: Director connections to island tax havens and corporate tax policy

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Abstract

Theory and recent empirical literature suggest that social and professional connections may influence corporate policy. However, inference may be biased by the possibility that firms who share peers also share unobserved characteristics that are correlated with observed policy. Using a novel identification strategy, we predict and find that exogenous board connections through well-known island tax havens have a significant effect on corporate tax policy. Specifically, we find that U.S. firms with a director who also serves on the board of a firm domiciled in the islands of the Bahamas, Bermuda, or the Caymans, exhibit significantly greater tax avoidance than other U.S. firms. The presence or arrival of such a director is associated with a reduction of between one and three percentage points in the firm's effective tax rate. The impact of island directors on tax policy increases with the director's influence on the board, and is robust to several measures of tax avoidance.

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Abstract

Theory and recent empirical literature suggest that social and professional connections may influence corporate policy. However, inference may be biased by the possibility that firms who share peers also share unobserved characteristics that are correlated with observed policy. Using a novel identification strategy, we predict and find that exogenous board connections through well-known island tax havens have a significant effect on corporate tax policy. Specifically, we find that U.S. firms with a director who also serves on the board of a firm domiciled in the islands of the Bahamas, Bermuda, or the Caymans, exhibit significantly greater tax avoidance than other U.S. firms. The presence or arrival of such a director is associated with a reduction of between one and three percentage points in the firm's effective tax rate. The impact of island directors on tax policy increases with the director's influence on the board, and is robust to several measures of tax avoidance.

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1. Introduction

A growing body of research suggests that, in addition to firm characteristics, a broad range of corporate policy choices that affect firm value are influenced by the social and professional networks in which firms are embedded. Firm connections (through board interlocks or the social and professional networks of executives and directors) have been shown to affect the design of executive compensation (Hwang and Kim, 2009; Wong, Gygax, and Wang, 2015), earnings management behavior (Chiu, Teoh, and Tian, 2012), the likelihood of CEO dismissal following poor performance (Nguyen, 2012), and capital investment decisions (Fracassi, 2014), among other policies.

In our study, we examine the influence of director networks on corporate tax policy, especially with respect to tax avoidance. The practice of tax avoidance has received significant criticism from the financial press and regulators who question whether U.S. firms are shouldering an equitable share of the tax burden. Indeed, recent estimates of tax avoidance are often expressed in terms of billions of dollars suggesting that corporate tax policy is economically important.[1] While several studies have identified firm characteristics associated with tax policy, relatively little is known regarding whether or not, and to what extent, individual directors influence corporate tax policy within firms (Hanlon and Heitzman, 2010).[2] In this paper, we contribute to this nascent literature by investigating whether directors with connections to well-known island tax havens influence corporate tax policy.

We believe examining the influence of director networks on tax policy is important for at least two reasons. First, there is growing empirical evidence that the information flowing through director networks in particular has significant effects on corporate policy and outcomes (see, for example, Bizjak, Lemmon, and Whitby, 2009; Larcker and Tayan, 2010; Stuart and Yim, 2010,

[1] In 2013, The Economist magazine published a special report on tax avoidance and offshore finance titled "the missing $20 trillion" (The Economist, February 16, 2013).

[2] In a recent survey conducted by KPMG, firms report that the board of directors are the most influential in approving and monitoring tax risk management (KPMG, 2011).

among others). Second, directors often have broader connections and interlocks than other executives in the firm; indeed their connections may be why they were brought on to the board in the first place.

However, understanding the effect of director networks (or indeed any network) on corporate tax (or any other) policy is not straightforward. One approach may be to simply examine the tax policies of firms that share directors. However, this approach suffers from a potentially major identification problem. Specifically, the emergence of networks is not exogenous. Firms that share directors, or have connected executives, may have observable and unobservable underlying characteristics that may lead them to have similar observable tax policies. In other words, the firms that share directors are likely to have similar operating and contracting environments, but these environments will directly affect the firm's tax policy in observable and unobservable ways. While the researcher can account for several observable characteristics, there remains significant unobservable heterogeneity in the determinants of tax policy that may also be related to the observed social network. Firms may have socially connected directors for several reasons and the similarities in their tax policy may be merely coincident with these unobservable factors. Furthermore, even if firms share a director, it is not clear if tax policy "expertise" is specifically flowing through that connection, or if the flow of information is of some other nature that is simply correlated with tax policy.

We take a novel approach towards alleviating these identification problems. Since we are specifically interested in the effect of directors on corporate tax policy, we identify a set of directors who serve (or have served) on the boards of firms that are domiciled in the well-known tax havens of the islands of Bahamas, Bermuda and the Caymans.[3] We refer to these directors as *island directors*. Firms that are domiciled on these tax-haven islands are there largely for tax avoidance reasons (Desai, Foley, and Hines, 2006), and directors associated with these firms will

[3]These island nations have no corporate income tax and are among the most popular corporate tax havens in the world (Pomerlau, 2014; CTJ, 2014).

be familiar with (or even be explicit drivers) of aggressive tax policies.[4] In addition, most firms domiciled in these islands operate almost entirely in other jurisdictions and, if publicly traded, are often listed on other stock exchanges. This means that the decision to be domiciled in the island tax havens is generally independent of the firm's general operations, an important element of our empirical design. Thus, if we compare two firms in the same industry, with a similar operating environment, and one has a director with a connection to an island tax haven (i.e., an island director) but the other does not, the tax haven connection can be considered exogenous with respect to the two firm's similar operating environment. If having an island director was germane to operating in that industry, both firms would be likely to have island directors. This makes director connections to tax havens a potentially powerful context in which to examine the impact of individual directors on corporate tax policy.

We thus examine the tax policies of the U.S. firms (i.e., firms that are not themselves domiciled on the island tax havens) on whose boards these island directors serve. Our sample includes 29,191 firm years between 1994 and 2010, of which 2,140 have a clearly identifiable island director. We predict that the arrival and presence of these island directors on the board facilitates the transfer of information regarding tax strategies and tax reporting preferences which result in lower tax liabilities for the firms on whose boards they serve.

A visual inspection of the data reveals a striking pattern. Figure 1 shows the mean level of tax avoidance before and after the appointment of an island director. We observe consistent evidence that the appointment of an island director is followed by a significant increase in tax avoidance. Specifically, the average book effective tax rate (ETR) before the appointment of an island director is 34.5%, while the average book effective tax rate, after the appointment of an island director, is 31.5%. Similarly, the average cash effective tax rate (CETR) prior to (after) the appointment

[4]For example, a recent report issued by the Citizens for Tax Justice (CTJ) indicated that during 2010 U.S. firms with foreign subsidiaries in the tax haven islands of the Bahamas, Bermuda, and the Caymans reported subsidiary profits that exceeded the gross domestic product of each island nation. Bermuda sourced profits, in particular, were nineteen times larger than its own gross domestic profit (CTJ, 2014).

of an island director is 25.6% (23%). These differences in effective tax rates, ranging from two to three percentage points, represent a statistically and economically significant shift in tax outcomes. Figure 1 also shows that average total book tax differences (TOTALBTD), average discretionary permanent book-tax difference (DTAX) and the average tax shelter use prediction score (SHELTER), which are other measures of tax avoidance, all increase following the appointment of an island director. These are consistent with a clear increase in tax avoidance surrounding the appointment of an island director.

In multivariate tests, we confirm the visual patterns in the data. Firms that have directors who also serve on the boards of firms domiciled in the island tax havens are, as we predict, significantly more tax aggressive than other U.S. firms that do not have these types of directors. We find that the presence or arrival of these island directors reduces the book effective tax rate of these firms by between 1% and 1.7% relative to those of other U.S. firms that do not have island directors. Similarly, the presence or arrival of an island director reduces the cash effective tax rates of these firms by between 1% and 1.2%, depending upon the specification. Our results are robust to several other empirical measures of tax avoidance including total book-tax differences, discretionary book-tax differences, and a tax shelter prediction score. Overall, the results are also robust to the inclusion of several control variables and different empirical specifications including firm fixed effects regressions, change regressions, and difference-in-difference estimations. Increases in tax avoidance policy are strongly associated with the arrival of island directors.

In subsequent analyses, we find that the relationship between island directors and corporate tax avoidance increases with the level of influence the island director has over the board. Specifically, tax avoidance is higher the longer the island director has been on the board – our proxy for board influence. We find this cross-sectional variation to be robust to the choice of tax avoidance proxy as well as the empirical specification used. This result further underscores the fact that island directors play a significant role in affecting corporate tax policy.

Our findings contribute to the literature in at least three ways. First, our study is the first to

explicitly show that having a director who has been exposed to aggressive tax policy by being affiliated with a tax haven firm has a significant incremental effect on the firm's tax avoidance, even after controlling for other potential tax-related determinants. This result provides a direct response to the specific call for research examining director influence over tax reporting decisions (Hanlon and Heitzman, 2010).

Second, our results contribute to the growing broader literature illustrating the economic importance of director networks in shaping corporate policy, and show that the flow of information through these networks includes information on corporate tax policy. Prior research (Desai and Dharmapala, 2009; Hanlon and Slemrod, 2009) suggest that tax policy significantly affects firm value and our results suggest that island directors have an economically significant effect on this policy. Indeed, our results indicate that the average firm in our sample with an island director on the board reports over $3 million lower income tax liabilities than other firms.

Furthermore, while most of the debate on tax avoidance centers around the use of offshore financial centers, our findings illustrate that firms can "import" some of the offshore tax expertise through their director networks. Our results provide broader insight into the effect that tax havens have on the individual tax behavior of, not only firms domiciled in those havens, but on other domestic firms as well. DeBacker, Heim, and Tran (2015) examine confidential IRS audit adjustments of foreign-controlled corporations and find firms from more corrupt countries engage in greater tax evasion. In a similar spirit, we examine whether firms with directors from an island tax haven engage in greater tax avoidance relative to other firms. Our setting allows us to examine whether the tax avoidance of U.S. firms operating in the same enforcement environment increases in the presence of an island tax haven director – a director from a country that has been associated with encouraging tax avoidance.

2. Background literature and hypothesis development

Our key premise, that a directors' professional network may influence a firm's corporate policy is based on two strands of literature that suggest that: (1) the information flowing through director networks is economically important and (2) that tax avoidance affects firm value and, as such, will be deliberately chosen, at least in part, by the firm's managers.

2.1. Board networks and corporate policy

An emerging and growing literature documents the economic importance of management and director networks on corporate policy and performance. Several studies argue that board connectedness is beneficial to shareholders. Perry and Peyer (2005) find that executives who accept an outside directorship increase firm value, unless the firm suffers from greater agency problems. Larcker, So, and Wang (2013) document that companies with well-connected directors earn superior risk-adjusted stuck returns. Horton, Millo, and Serafeim (2012) find that board connectedness is positively associated with future performance of companies in the United Kingdom, while Singh and Schonlau (2009) report that firms with more connected boards are associated with better performing acquisitions.

However, a number of other studies have pushed back on the idea that director connections are an unalloyed good for companies. For example, Devos, Prevost, and Puthenpurackal (2009) report that interlocked directors are associated with lower industry-adjusted firm performance, and that shareholders react negatively to the formation of director interlocks. In Europe, Bohler, Rapp, and Wolff (2010) and Andres, van den Bongard, and Lehmann (2013) report that board connectedness negatively affects the performance of German companies. Nguyen (2012) finds that, within firms, CEOs are less likely to be dismissed for poor performance if the CEO and directors are connected through social networks. Nevertheless, even with this less benign view of director networks, the growing consensus is that director networks are economically important.

Perhaps more relevant for our study are papers which document that information transmission

about specific corporate policies flows through director networks. Bizjak et al. (2009) document that stock option backdating spreads through interlocked boards. Chiu et al. (2012) find evidence of earnings management contagion in firms with interlocked boards and Omer, Shelley, and Tice (2014) report that firms with well-connected directors are less likely to misstate their annual financial statements. Wong et al. (2015) present evidence that board interlocks are positively linked with similarity in the design of CEO compensation packages in interlocked firms. Hwang and Kim (2009) document that a sizable number of legally independent directors that serve on the boards of Fortune 100 firms are socially connected to their CEO, and that CEO compensation awarded by conventionally and socially independent boards is lower and exhibits stronger pay performance sensitivity. Fracassi (2014) finds that more extensive social connections between companies increase the similarity of their capital investments. Even within firms, social networks are important for information transmission; Cao, Dhaliwal, Li, and Yang (2015) show that independent directors connected to the firm's senior executives earn higher returns when they trade in their firm's shares.

2.2. Tax avoidance

Research suggests that corporate tax policy can have a significant economic effect on firm value, although the effect of tax avoidance on shareholder value may be moderated by firm characteristics and other agency concerns. Hanlon and Slemrod (2009) find that the market reacts negatively to announcements of a firm's decision to use tax shelters, although this reaction is less negative if the firm is not viewed as being overly tax aggressive. Similarly, Desai and Dharmapala (2009) find a positive relationship between firm value and tax avoidance especially in better governed firms.[5]

While several empirical studies have found that firm characteristics affect corporate tax policy (Gupta and Newberry, 1997; Rego, 2003; Desai and Dharmapala, 2006; Wilson, 2009), recent

[5]Goh, Lee, Lim, and Shevlin (2013) find some evidence that moderate forms of tax avoidance decreases the cost of equity capital.

work by Dyreng, Hanlon, and Maydew (2010) finds that individual top executives have incremental effects on their firm's tax avoidance beyond that explained by firm characteristics.[6] The fact that individual "fixed effects" have a significant effect on tax avoidance suggests that the networks in which those individuals are embedded may also have an effect on tax avoidance as information flows through these networks.

Nevertheless, there has been little study of the effects of networks on corporate tax policy.[7] One notable exception, and the study that is most similar in spirit to ours, is that by Brown and Drake (2014) who find that firms that are connected through their boards to other low tax firms have lower cash effective tax rates. They also find that ties to low tax firms are more influential if the firm and the one it is connected to are operationally and strategically similar. Our study differs from theirs in several important ways. First, our sample is much larger and covers a longer time period and we are able to control for a number of other board and ownership related characteristics that could be correlated with tax avoidance. Second, we use five measures of tax avoidance to test our hypothesis. Third, and most important, we are able to isolate the specific mechanism by which a board interlock can influence tax avoidance. In other words, instead of looking at the policy of firms with shared directors (who may also share unobserved characteristics related to tax policy), we are able to identify an exogenous director connection that is specifically related to tax expertise.

2.3. Hypothesis and identification

Assessing the effect of director networks on tax avoidance is not a straightforward task, and suffers from a major identification problem. Figure 2(a) illustrates this potential identification issue. Networks are not exogenous, and firms that share directors (or are connected in some way) are likely to be firms that share similar observable and unobservable operating and contracting environments. Thus, if one were to observe two firms connected through their directors with

[6]For thorough reviews, see Shackelford and Shevlin (2001) and Hanlon and Heitzman (2010).

[7]Brown (2011) finds some evidence that the corporate-owned life insurance (COLI) shelter is correlated across board interlocks using a small sample of 41 COLI adopters.

similar levels of tax avoidance, the firms' similar tax policies could merely be correlated with unobservable factors that were responsible for the existence of the connection in the first place. While this may not be the case for all firms that share directors, the fact that firm characteristics have been shown to affect corporate tax policy suggests this form of endogeneity could be very important and cannot be ignored. Furthermore, it is not clear that even if firms are connected through directors, specific information on tax policy flows between these firms. Other information may flow through the network that may simply be coincident with tax policy.

Given this identification problem, we focus on firms that are connected through their directors to firms in island tax havens. We argue that this alleviates the identification problem in at least two ways. First, firms domiciled in tax havens are there largely for tax avoidance reasons (Desai et al., 2006), and directors associated with these firms will be familiar with aggressive corporate tax policies. This means that directors from these firms will have explicit tax avoidance expertise which they can bring with them to another board. Furthermore, most firms domiciled in these islands operate almost entirely in other jurisdictions and, if publicly traded, are often listed on other stock exchanges. This means that the decision to be domiciled in the island tax havens is generally not an operating decision, and is exogenous with respect to unobserved factors that may be jointly correlated with operating decisions and tax policy.

Our central hypothesis is thus that firms with island director connections will exhibit greater tax avoidance, even after accounting for other determinants of tax avoidance. As we illustrate in Figure 2(b), to the extent that firms have similar characteristics or operating environments, they may share some elements of tax policy but firms with island directors will have incrementally higher levels of tax avoidance even after controlling for other firm characteristics. In other words, assume there are two firms with similar characteristics and operating environments but one of the firms is connected to an *exogenous* tax aggressive network via an island director and the other is not. Our prediction is that the firm with the island director will be more tax aggressive than the one without, even after we account for the similarities between both firms. Stated more formally:

H_1: Firms with island director connections will exhibit greater tax avoidance.

We recognize that some island directors may not be as influential as others in shaping or affecting corporate tax policy. For example, the island director may not have had enough time to influence tax outcomes, or there may be other directors on the board with greater influence who do not wish to pursue additional tax avoidance. Hence, we offer a second hypothesis that firms with more *influential* island director connections will exhibit greater tax avoidance. Stated more formally:

H_2: The positive relationship between island director connections and tax avoidance is increasing in island director tenure.

3. Methodology

This section describes the construction of our sample (Section 3.1), choice of tax avoidance measures (Section 3.2), the process used in identifying island director connections (Section 3.3), and our empirical design (Section 3.4).

3.1. Sample construction

Our sample is constructed primarily from the intersection of the BoardEx, OSIRIS, Compustat, and Compaq Disclosure databases during fiscal years 1994 through 2010. Because of additional data requirements for identifying island director connections (which we detail in Section 3.3), we are limited to this time period. We use the Compustat database to construct our tax avoidance measures and most of our control variables, and we use the Compaq Disclosure database to identify several board and ownership characteristics. Because financial firms and utilities have inherently different institutional and regulatory characteristics, we follow related research and omit these firms from our analysis. We also limit our analysis to firms with non-negative and non-missing income tax expense, cash taxes paid, or pretax book income, as such firms are in an inherently different tax planning position relative to other firms. Finally, because we scale many of our

variables by lagged total assets, we omit firms with assets less than $1 million in order to combat the small deflator problem (Chen, Chen, Cheng, and Shevlin, 2010). Collectively, these procedures result in 29,191 firm-year observations.[8]

Table 1 reports our sample composition in terms of both the time and industry distributions. Panel A depicts the time distribution of our full sample. We note that the distribution of firms per year is approximately six to seven percent, with a slight reduction to four to five percent per year after 2007. Because we require firms to have non-negative pretax book income, the global economic downturn that occurred in 2007 and 2008 could account for the smaller number of firms though the actual reduction is not large. Panel A also reports the time distribution of island directors. The number of firms that have an island director connection (*Island director* = 1) relative to the total number of firms per year is anywhere between two and seventeen percent, though we note a larger number of firms with such connections in the latter part of our sample. Panel B reports the industry distribution of our full sample, and the industry distributions of firms with and without island director connections. Although the number of firm-years with and without island director connections are different across industry groupings, the relative patterns (i.e., distribution) is similar. Although we present industry groupings based on one-digit SIC for simplicity, we control for industry using two-digit SIC or Fama and French (1997) classifications in all of our multivariate tests.[9]

3.2. Measures of tax avoidance

Because corporate tax data, including tax returns, specific tax strategies employed and contingent risks associated with these strategies, are generally not publicly disclosed, we follow related tax research and use multiple empirical measures of tax avoidance based on financial statement data

[8]We have a smaller sample when we estimate our regressions using a changes specification which requires the use of lagged variables in addition to contemporaneous measures.

[9]In untabulated tests, we confirm our results are robust to the inclusion of industry fixed effects using various definitions.

in order to convincingly test our hypothesis.[10] We use five conventional measures of tax avoidance: the book effective tax rate (ETR), the cash effective tax rates (CETR), total book-tax differences (TOTALBTD), discretionary book-tax differences (DTAX), and the tax shelter prediction score (SHELTER). Our first measure, ETR, is computed as total tax expense divided by pretax book income (Compustat TXT/PI). Our second measure, CETR, equals total cash taxes paid divided by pretax book income (Compustat TXPD/PI). Lower values of ETR and CETR reflect greater tax avoidance. Our third measure, TOTALBTD, captures the difference between book income and taxable income. TOTALBTD is computed as pretax book income less non-controlling interest in earnings (Compustat PI − MII) minus taxable income estimated as total tax expense plus deferred items (Compustat TXFED + TXFO + TXDI) scaled by the top statutory corporate tax rate of 35% during our sample period. The result is an estimate of the differences between income reported using financial reporting (GAAP) rules and income reported using tax (IRS) rules, and is then scaled by lagged total assets.[11] Higher values of TOTALBTD reflect greater tax avoidance.

Our fourth measure is the discretionary book-tax measure of Frank, Lynch, and Rego (2009), DTAX, which captures the discretionary items that impact permanent BTDs after accounting for non-discretionary mechanical items such as state income tax expense, NOLs, unconsolidated earnings and others.[12] Higher values of DTAX reflect greater tax avoidance. Our final measure of tax avoidance, SHELTER, is constructed using the tax shelter prediction model of Wilson (2009).[13]

[10] We follow extant tax research and consider "tax avoidance" to encompass a range of activities that are intended to reduce taxable income relative to book income (Dyreng, Hanlon, and Maydew, 2008; Hanlon and Heitzman, 2010). These activities may range from perfectly legal transactions to more questionable transactions. We do not attempt to distinguish between either.

[11] Conceptually, this measure captures tax strategies that have a financial statement impact (i.e., increase GAAP income but not taxable income, or lower taxable income but not GAAP income) as well as temporary timing differences, such as differences in depreciation methods.

[12] We specifically follow Frank et al. (p.473 2009) and estimate DTAX as the residual from regressing permanent differences on intangibles, unconsolidated earnings, non-controlling interest in earnings, state tax expense, change in NOL, and lagged permanent differences. Each regression is estimated by two-digit SIC and fiscal year, requiring at least 15 non-missing observations in order to estimate DTAX.

[13] We follow prior studies (Kim, Li, and Zhang, 2011; Armstrong, Blouin, and Larcker, 2012) and use the tax shelter prediction model of Wilson (2009, p. 988), defined as $-4.86 + 5.20 * BTD + 4.08 * |ACC| - 1.41 * LEV + 0.76 * SIZE + 3.51 * ROA + 1.72 * FI + 2.42 * R\&D$.

Higher values of SHELTER reflect greater tax avoidance. Both DTAX and SHELTER have been regarded in the literature as reflecting more aggressive tax strategies (McGuire, Omer, and Wang, 2012; Armstrong et al., 2012).

3.3. Island director connections

We construct our measure of island director connections, *Island director*, as follows. First, we obtain, from the OSIRIS database, a list of all companies incorporated in the island tax havens of the Bahamas, Bermuda, or the Cayman Islands. OSIRIS is a product of Bureau van Dijk Electronic Publishing, and strives to include all publicly listed companies worldwide. It provides, to varying degrees, financial, ownership, and stock data as well as ratings and company news for more than 45,000 firms from more than 130 countries. In particular, the OSIRIS database specifically lists the country in which a firms is incorporated. The Bureau van Dijk databases (including OSIRIS and its European counterpart Amadeus) have been recently used by Li, Moshirian, Pham, and Zein (2006), Faccio, Marchica, and Mura (2011), and Miletkov, Poulsen, and Wintoki (2014), among others.

We then match the list of firms obtained from OSIRIS with the list of firms in the BoardEx North America database. BoardEx provides a comprehensive list of firms operating in North America, including firms that operate in the U.S. or Canada that are also incorporated in the island tax havens. BoardEx also provides a comprehensive list of the directors that are, or have been, associated with these island tax haven firms. These directors are the ones we consider to be *island directors*. More importantly, BoardEx provides a list of the other U.S. firms that these island directors are connected to. In other words, for every director who serves (or has served) in a firm that is incorporated in one of the island tax havens, we are able to determine in which other U.S. firms they serve as directors. In all cases, we are careful to ensure that an individual is classified as an island director only after he or she has been appointed to the board of an island tax haven firm. This is to ensure that these individuals are already associated with island tax havens prior

to being appointed to the U.S. firm in which we would consider them to be island directors. Our conservative classification here means that there are possibly other island directors we may have missed, but we believe that, if anything, this merely biases us against finding any effects for our sample of island directors.

The result of our classification procedure is to obtain a broad sample of directors serving on boards of U.S. firms who have an affiliation with one or more firms incorporated in one of the island tax havens. In other words, we are able to identify a list of firms that have at least one island director that also serves as a director of a U.S. firm. In our empirical analysis, we assign a value of one to the variable *Island director* for each firm that has an island director, and zero otherwise.

3.4. Multivariate regression specification

We test our hypothesis that island director connections impact tax avoidance by estimating variations of the following empirical model:

$$\begin{aligned}\text{Tax avoidance}_{i,t} =& \alpha_0 + \alpha_1 \text{Island director}_{i,t} + \beta_k \text{Board characteristics}_{i,t} + \gamma_j \text{Firm characteristics}_{i,t} \\ &+ \text{time and industry dummies} + \epsilon_{i,t} \end{aligned} \tag{1}$$

Equation (1) is adapted from Chen et al. (2010) and has been used extensively in related tax research. This specification is also in the same spirit of the early models of Stickney and McGee (1982) and Gupta and Newberry (1997), who model tax outcomes as a function of firm and industry characteristics. As discussed in Chen et al. (2010), the idea behind Equation (1) is to use a thorough set of controls in order to isolate the impact of our variable of interest, *Island director*, on tax avoidance while controlling for items that indirectly impact tax outcomes such as profitability, firm size, growth opportunities, NOLs, and other firm characteristics.

Tax avoidance equals one of five empirical measures described in Section 3.2, and *Island director* equals one if the firm has a director affiliated with another firm located in one of the island

tax havens as described in Section 3.3.[14] We include several variables capturing board and ownership characteristics obtained from Compaq Disclosure which contains the largest coverage of director data. *Board size*, is computed as the natural logarithm of the number of directors serving on the board. *Percentage of independent directors* is the percentage of total directors who are not employed by the firm. *Percentage ownership by blockholders* is the percentage of shares held by individuals holding at least 5% or more of the firm's outstanding shares. *Percentage ownership by insiders* is the percentage of shares held by executives and employees. *Percentage ownership by institutions* is the percentage of shares held by institutional investors who may not hold more than 5% of the firm's outstanding shares. Finally, *CEO is chair* equals one if the CEO is also the chair of the board. We include these director characteristics, including institutional oversight, to ensure that our coefficient estimate of *Island director* is not simply picking up these factors.[15]

We follow related tax research and use a broad set of firm characteristics that may be correlated with tax outcomes, such as financial reporting aggressiveness, profitability, size, foreign income, and others. *Pretax return on assets*, which controls for the effects of profitability on tax avoidance (Rego, 2003), equals pretax book income divided by lagged total assets (Compustat PI/AT). *Pretax discretionary accruals* is computed following the procedures in Frank et al. (2009) who show that tax avoidance is positively related to financial reporting aggressiveness.[16] *Firm size*, which controls for tax-related differences in firm size (Stickney and McGee, 1982; Gupta and Newberry, 1997; Mills, Erickson, and Maydew, 1998), equals the natural logarithm of lagged market capitalization (Compustat PRCC_F*CSHO). *Foreign income*, which controls for the effects of foreign operations on tax avoidance (Rego, 2003), equals one if the firm reports positive pretax foreign

[14]For ease of exposition, all variables are also defined in the appendix.

[15]The effect of board composition on tax aggressiveness is an under-examined area of research. Lanis and Richardson (2011) and Richardson, Taylor, and Lanis (2013) find some evidence that stronger board oversight, through independent directorships results in less tax aggressiveness for a small sample of Australian firms. Armstrong, Blouin, Jagolinzer, and Larcker (2015) find a negative relation between board independence and high levels of tax avoidance for U.S. firms

[16]We specifically follow Frank et al. (2009, p. 479) and compute performance-matched pretax discretionary accruals by industry and fiscal year, requiring at least 10 observations for each industry-year group.

income (Compustat PIFO) and zero otherwise. *Equity income*, which controls for tax differences associated with unconsolidated earnings reported under the equity method (Chen et al., 2010), equals one if the firm reports positive equity in earnings (Compustat ESUB) and zero otherwise. *Intangibles* equals intangible assets divided by lagged total assets (Compustat INTAN/AT). *PPE*, which controls for tax differences associated with capital intensity, equals net property, plant, and equipment divided by lagged total assets (Compustat PPENT/AT). *NOL* equals one if the firm reports a positive tax loss carry forward (Compustat TLCF) and zero otherwise. ΔNOL equals the change in tax loss carry forward divided by lagged total assets. *MTB*, which controls for differences in growth opportunities (Chen et al., 2010) equals the lagged market-to-book value of equity ratio (Compustat PRCC_F*CSHO/CEQ). *Leverage*, which controls for tax differences associated with debt usage (Graham and Tucker, 2006; Chen et al., 2010), equals total long-term debt divided by lagged total assets (Compustat DLTT/AT). *Free cash flow*, which controls for the effects of cash holdings on tax avoidance (Dhaliwal, Huang, Moser, and Pereira, 2011), equals cash flow from operations, less capital expenditures, scaled by lagged total assets (Compustat (OANCF – CAPX)/AT). *R&D*, which controls for the effects of R&D on tax avoidance, equals total research and development expenditures divided by lagged total assets (Compustat XRD/AT). *Tax haven*, which controls for the effects of foreign affiliates located in tax havens, equals one if the firm reports a material subsidiary in a known tax haven within the last three years, including the current year, and zero otherwise.[17] Finally, we include fiscal year and industry (two-digit SIC) dummies, and standard errors are clustered by firm.[18] Next, we turn our attention in the following section to our empirical results.

[17]The data procedures used to identify tax haven operations are described in Dyreng and Lindsey (2009). We thank Scott Dyreng for providing access to this data via his faculty webpage.

[18]In untabulated tests, we confirm that our results are robust to clustering by firm and fiscal year.

4. Results

This section provides a discussion of our descriptive statistics (Section 4.1), univariate differences in means and medians (Section 4.2), correlations (Section 4.3), OLS regressions (Section 4.4), changes specifications (Section 4.5), difference-in-differences estimation using a pooled cross-sectional model (Section 4.6.1) and firm fixed effects (Section 4.6.2). In sections 4.7, through 4.9, we examine the influence of island directors through their board tenure.

4.1. Descriptive statistics

Table 2 reports descriptive statistics for the primary variables used in our empirical analysis. Mean ETR is approximately 33.6%, which is close to the top statutory corporate tax rate of 35% for our sample period. Mean CETR is 25.7% which is lower than the book effective tax rate (Dyreng, Hanlon, and Maydew, 2008). Consistent with related tax research (e.g., Frank et al., 2009; McGuire et al., 2012), mean TOTALBTD and DTAX equal 2.9% and 1.5% of lagged total assets, respectively. Finally, mean SHELTER is 0.893 which is consistent with tax-related research using this particular measure (e.g., Kim, Li, and Zhang, 2011; Armstrong, Blouin, and Larcker, 2012). The number of firms with an island director connection (*Island director*) is relatively small, representing approximately 7.3% of our entire sample, or 2,140 firm-years. The average board consists of approximately seven to eight directors (*Board size*), and approximately 71% of these directors are not employed by the firm (*Percentage of independent directors*). These numbers are similar to those reported in other studies that have used a broad cross-section of firms (see, for example, Linck, Netter, and Yang, 2008; Cicero, Wintoki, and Yang, 2013, among others). Blockholders (*Percentage ownership by blockholders*), on average, own approximately 38.6% of the outstanding shares, institutions (*Percentage ownership by institutions*) own approximately 50%, and insiders (*Percentage ownership by insiders*) own less than 20%. More than half of our sample firms have a CEO who also serves as chair of the board (*CEO is chair*). Finally, the summary statistics of the rest of our control variables are consistent with related tax research, and we include

the mean pretax book income and lagged assets for ease in interpreting the economic magnitudes in our multivariate regressions.

4.2. Univariate differences

Table 3 reports univariate differences in means and medians for the variables used in our empirical specifications for firms with (*Island director* = 1), and without (*Island director* = 0), island director connections. Results suggest that firms with island director connections have lower effective tax rates (ETR), lower cash effective tax rates (CETR), higher total book-tax differences (TOTALBTD), and higher tax shelter prediction scores (SHELTER), providing some initial support for our hypothesis (p-value < 0.001). We note, however, that these results are simply univariate comparisons and do not control for characteristics related to both island director connections and tax avoidance that could account for these relationships. Univariate differences in the remaining variables show that firms with island director connections are different along most variables thus supporting their inclusion in Equation (1).

4.3. Correlations

Table 4 reports correlation coefficients for our variables of interest. With the exception of DTAX, the tax avoidance measures are significantly correlated with the presence of an island director and the univariate relationship is in the predicted direction ($p < 0.05$). We also report pair-wise correlations with the other board characteristics and their respective correlations with our tax avoidance measures. Overall, pair-wise correlations suggest that the presence of an island director (*Island director*) is correlated with greater tax avoidance (i.e., lower book and cash effective tax rates and higher total book-tax differences and tax shelter prediction scores) and the correlations are significant ($p < 0.05$). Next, we turn our attention to our multivariate specifications.

4.4. OLS regressions

Table 5 presents results from estimating Equation (1) via OLS. The results show that firms with island director connections (*Island director*) have, on average, lower effective tax rates (Col-

umn (1), estimate = −0.0108, $p = 0.001$), lower cash effective tax rates (Column (2), estimate = −0.0097, $p = 0.019$), higher total book-tax differences (Column (3), estimate = 0.0042, $p = 0.001$), higher discretionary book-tax differences (Column (4), estimate = 0.0093, $p = 0.000$), and a higher probability of engaging in tax shelters (Column (5), estimate = 0.0790, $p = 0.000$). These estimates also appear to be economically meaningful. For example, using the mean pretax income reported in Table 2 ($309 million) and the estimate in the ETR regression (Column (1)), firms with island directors on the board report approximately $3.34 million lower income tax liabilities relative to other firms. Similarly, using the estimate in the CETR regression (Column (2)), firms with island directors on the board report approximately $3 million less in cash taxes paid to tax authorities relative to other firms. Coefficients and signs on the control variables, as well as each model's R^2 are generally consistent with related tax research. Overall, our results using OLS regressions support our hypothesis that firms with island director connections exhibit significantly greater tax avoidance.

4.5. Changes specifications

Table 6 presents results from estimating Equation (1) expressed as changes. This specification allows us to test the extent to which the presence of an island director is associated with innovations (i.e., changes) in tax avoidance. This specification also alleviates the concern that there may be some underlying time-invariant firm characteristic that is responsible for the positive relationship between the presence of an island director and tax avoidance. We augment the specification to include a lagged measure of tax avoidance as the change in tax avoidance may be conditional on its beginning level. Results continue to support our hypothesis.

Specifically, firms with island director connections (*Island director*) on average experience a reduction in effective tax rates (Column (1), estimate = −0.0069, $p = 0.001$), a reduction in cash effective tax rates (Column (2), estimate = −0.0149, $p = 0.000$), an increase in book-tax differences (Column (3), estimate = 0.0020, $p = 0.036$), an increase in discretionary book-tax differences

(Column (4), estimate = 0.0038, $p = 0.046$), and an increase in the probability of engaging in a tax shelter (Column (5), estimate = 0.0538, $p = 0.000$). These results provide consistent evidence in favor of our hypothesis that firms with island director connections exhibit significantly greater tax avoidance.

4.6. Difference-in-differences estimation

In this section, we use a pooled difference-in-difference design using OLS (Section 4.6.1) and firm fixed effects (Section 4.6.2) to test whether the appointment of an island director is associated with an increase in tax avoidance.

4.6.1. Pooled cross-sectional regressions

Results from Table 6 using change regressions suggest that island director connections are associated with innovations in tax avoidance. To further test this possibility, we re-estimate Equation (1) with a difference-in-difference design by including an indicator variable that equals one if the firm has ever had an island director connection (*Island firm*) and an indicator variable that equals one for years during and after the first appointment of an island director (*Post*). Table 7 reports results using OLS.

Examining the coefficient estimates on *Post* suggests that the appointment of an island director to the board is associated with lower subsequent effective tax rates (Column (1), estimate = −0.0172, $p = 0.000$), lower subsequent cash effective tax rates (Column (2), estimate = −0.0117, $p = 0.002$), higher subsequent total book-tax differences (Column (3), estimate = 0.0057, $p = 0.002$), higher subsequent discretionary book-tax differences (Column (4), estimate = 0.0083, $p = 0.002$), and higher subsequent likelihood of engaging in tax shelters (Column (5), estimate = 0.0388, $p = 0.044$). Interestingly, the coefficient estimates on *Island firm* are insignificant in almost every specification suggesting that these firms exhibit similar tax avoidance to other firms prior to the appointment of an island director. These results corroborate the results from the change specifications reported in Table 6 and provide further support for our hypothesis that firms with island

director connections engage in greater tax avoidance.[19]

4.6.2. Firm fixed effects regressions

Table 8 reports results from estimating our difference-in-difference design described in the previous section with firm fixed effects. The advantage of this specification is that it controls for unobservable time-invariant firm characteristics that may be correlated with both tax avoidance and island director connections. Results from Table 8 corroborate our pooled difference-in-difference results from Table 7 in both sign and magnitude. Specifically, firms that have appointed an island director to the board have lower subsequent effective tax rates (Column (1), estimate = −0.0150, p = 0.000), lower subsequent cash effective tax rates (Column (2), estimate = −0.0071, p = 0.086), higher subsequent total book-tax differences (Column (3), estimate = 0.0032, p = 0.018), higher subsequent discretionary book-tax differences (Column (4), estimate = 0.0086, p = 0.003), and a higher likelihood of engaging in tax shelters (Column (5), estimate = 0.0264, p = 0.053).[20] These results corroborate our findings from the previous section using a pooled cross-sectional difference-in-difference design, and again provide consistent evidence in favor of our hypothesis that firms with island director connections engage in greater tax avoidance.

4.7. Island director tenure: the effect of island director influence on tax aggressiveness

In this section, we test our second hypothesis which predicts that the positive relationship between island director connections and tax avoidance is increasing in island director tenure – i.e., directors who are expected to have greater influence on the board. We repeat our empirical design choices using OLS regressions (Section 4.7.1), difference-in-difference estimations (Section 4.7.2), and changes regressions (Section 4.7.3).

[19]We perform a number of robustness tests to confirm our main result from OLS, changes, and difference-in-difference regressions. First we re-estimate these regressions using various industry fixed effects (e.g., one-digit SIC, Fama-French 49, three-digit SIC) and results hold. Second, our results are unchanged if we cluster by firm and fiscal year. Third, our results are inferentially similar if we use Newey-West corrected standard errors up to four lags.

[20]In this specification, we omit *Island firm* as it is absorbed into the firm fixed effect.

4.7.1. OLS regressions

Table 9 reports OLS regressions in which we augment the previous model to include *Island director tenure*, defined as the number of years the island director has been serving on the firm's board. We include both *Island director* and *Island director tenure* in order to test the extent to which an island director's influence matters more than the mere presence of an island director.[21] Results strongly suggest that influence matters. Specifically, firms with greater island director tenure report lower book effective tax rates (Column (1), estimate = −0.0021, $p = 0.000$), lower cash effective tax rates (Column (2), estimate = −0.0010, $p = 0.038$), greater total book-tax differences (Column (3), estimate = 0.0006, $p = 0.003$), greater discretionary book-tax differences (Column (4), estimate = 0.0010, $p = 0.001$), and a greater likelihood of engaging in tax shelters (Column (5), estimate = 0.0091, $p = 0.000$).[22] Overall, these results support our second hypothesis that the relationship between island director connections and tax avoidance strengthens with island director influence.

4.7.2. Difference-in-difference estimation

Table 10 reports difference-in-difference regressions in which we augment the previous model to include *Island director tenure*, defined as the number of years the island director has been serving on the board. As before, we include *Island director tenure* in order to test the extent to which an island director's influence matters more than the mere presence of an island director. Results continue to support our hypothesis that influential island directors significantly affect tax avoidance. Specifically, firms with greater island director tenure report lower book effective tax rates (Column (1), estimate = −0.0018, $p = 0.000$), lower cash effective tax rates (Column (2), estimate = −0.0008, $p = 0.091$), greater total book-tax differences (Column (3), estimate = 0.0005, $p =$

[21] Results are unchanged if we exclude *Island director* from the regression.

[22] Results are inferentially similar if we eliminate firms that report material operations in a known tax haven. Though reducing our sample size and power, this extreme robustness test further addresses the empirical possibility that our *Island director* dummy may simply be capturing the tax consequences of a firm's tax haven operations and not island director tax expertise, per se.

0.021), greater discretionary book-tax differences (Column (4), estimate = 0.0008, $p = 0.014$), and a greater likelihood of engaging in tax shelters (Column (5), estimate = 0.0074, $p = 0.005$). Overall, these results provide further support for our second hypothesis that the relationship between island director connections and tax avoidance strengthens with island director influence.

4.7.3. Changes regressions

Table 11 reports changes regressions in which we augment the previous model to include *Island director tenure*, defined as the number of years the island director has been serving on the board. We continue to include both *Island director* and *Island director tenure* in order to test the extent to which an island director's influence matters more than the mere presence of an island director.[23] Results continue to support our hypothesis that influential island directors significantly affect tax avoidance. Specifically, firms with greater island director tenure on average experience a reduction in book effective tax rates (Column (1), estimate = −0.0009, $p = 0.001$), a reduction in cash effective tax rates (Column (2), estimate = −0.0010, $p = 0.007$), an increase in total book-tax differences (Column (3), estimate = 0.0004, $p = 0.005$), an insignificant increase in discretionary book-tax differences (Column (4), estimate = 0.0001, $p = 0.378$), and an increase in the likelihood of engaging in tax shelters (Column (5), estimate = 0.0049, $p = 0.000$). Overall, these results support our second hypothesis that the relationship between island director connections and tax avoidance strengthens with island director influence.

5. Additional analyses

Thus far, our analysis shows that there is a strong association between the arrival and presence of island directors and firm tax avoidance. In this section, we explore alternative explanations for our results as well as other specifications, including factor analysis (Section 5.1), accounting for governance (Section 5.2), and using uncertain tax benefits as a measure of tax risk (Section 5.3).

[23] Results are unchanged if we exclude *Island director* from the regression.

5.1. Factor analysis

In the previous section, we used multiple conventional measures of tax avoidance in order to convincingly test our hypotheses. However, these measures are not perfect substitutes as some measures may be picking up different forms of tax avoidance (Hanlon and Heitzman, 2010). In this section, we use principal components factor analysis to extract a common tax avoidance factor from our five empirical measures of tax avoidance. Because the first eigenvalue is 1.20 and the remaining eigenvalues are less than 0.20, we retain the first factor. We find that the first factor is positively correlated with the book and cash effective tax rates and negatively correlated with book-tax differences and the shelter prediction score, suggesting that smaller values of the tax avoidance factor reflect greater tax avoidance.

In untabulated results, we repeat our analysis by re-estimating OLS regressions, changes regressions, and difference-in-difference regressions (including firm fixed effects) and find strong evidence that the presence or appointment of an island director is associated with an increase in tax avoidance using the common tax factor extracted from five different empirical measures of tax avoidance ($p < 0.01$). Moreover, the relationship appears to be stronger in the presence of island directors with longer tenure and thus greater influence ($p < 0.05$). Overall, these results corroborate our main results that island director connections are associated with an increase in tax avoidance.

5.2. Governance

In the previous sections, we presented consistent evidence in favor of our hypothesis that the presence or appointment of an island director is associated with an increase in tax avoidance. In this section, we investigate the possibility that our results might manifest primarily among poorly governed firms. To this end, we augment our empirical model and re-estimate our OLS regressions, changes regressions, and difference-in-difference regressions (including firm fixed effects) by including a measure of governance using the Gompers, Ishii, and Metrick (2003) anti-takeover

provisions index and interacting it with our *Island director* dummy variable. In untabulated tests, we generally do not find any significant effect of the interaction between governance and the presence of an island director on tax avoidance. Thus, we find no clear evidence that governance explains our results or that the impact of island directors varies with the number of anti-takeover provisions.

5.3. Uncertain tax benefits (FIN 48)

In the previous section, we presented consistent results that suggest the appointment or presence of an island director is associated with significantly greater tax avoidance using five conventional empirical measures of tax avoidance. In this section, we confirm our results using the disclosed reserve for uncertain tax benefits pursuant to FIN 48. The advantage to using this measure is that it is intended to reflect the amount of tax benefits that are not expected to be sustained upon an audit and can thus serve as an alternative measure of tax risk (Hutchens and Rego, 2013). However, the cost to using this measure is a significantly reduced sample size as these disclosures are only available for fiscal years after 2006.

Using the reserve for uncertain tax benefits reported at the end of the fiscal year (Compustat TXTUBEND) divided by pretax book income, we re-estimate our OLS regressions, change regressions, and difference-in-difference estimations and find consistent results. In all cases, we find that managers increase their reserve for uncertain tax benefits when an island director is appointed or serving on the board, suggesting that the firm is taking greater tax risk. As before, we confirm that this relation becomes stronger with the island director's tenure. Overall, these results provide consistent evidence that island director connections have a significant effect on tax avoidance.

6. Conclusion

We examine whether firms with board connections through well-known island tax havens exhibit greater tax avoidance. Prior research suggests that social and professional connections can

have an economically important effect on corporate policy choices. However, recent studies have been unable to identify the exact mechanism through which this influence occurs. We use a novel identification strategy to examine the relationship between board connections and tax avoidance by examining board connections through well-known island tax havens. We find consistent evidence that these board connections are associated with more tax avoidance, and we observe this result under numerous empirical design choices.

Our study makes the following key contributions. First, we contribute to the tax literature by identifying a specific context in which information related to corporate tax strategies are being disseminated through board interlocks. Our identification strategy isolates the exogenous component of the board interlock by focusing on interlocks through island tax haven firms. Second, we contribute to the board connections literature by identifying an economically meaningful effect on an important corporate policy choice. Finally, our research should be of interest to academics, regulators, and investors by demonstrating that individuals, in our case directors, can have a significant influence on corporate tax policy.

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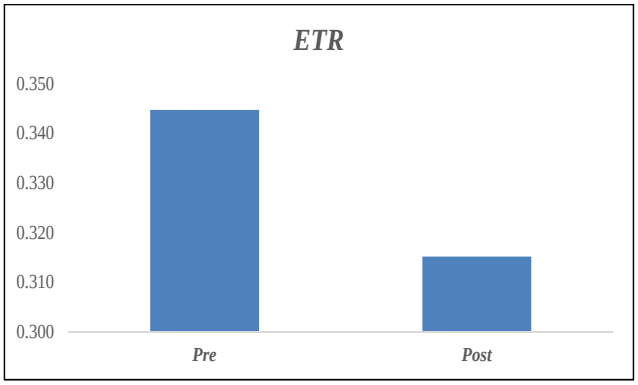
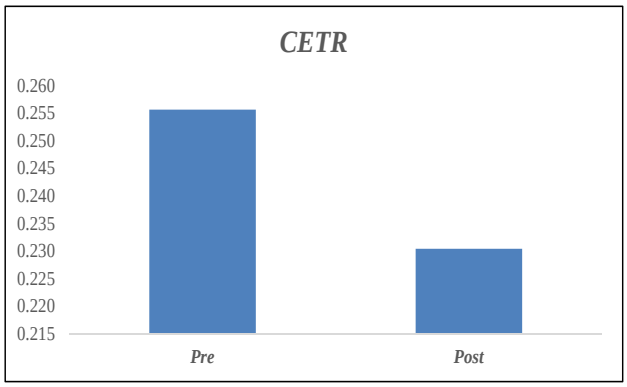
Variable Appendix

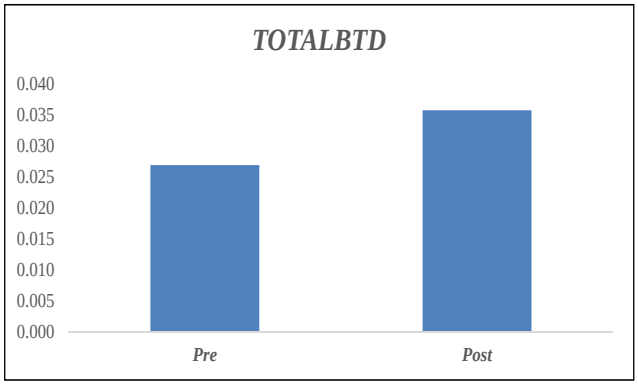
Variable	Definition
A.1. Dependent Variables	
ETR	The annual book effective tax rate equals total tax expense (Compustat $TXT_{i,t}$) over pretax book income (Compustat $PI_{i,t}$).
CETR	The annual cash effective tax rate equals cash taxes paid (Compustat $TXPD_{i,t}$) over pretax book income (Compustat $PI_{i,t}$).
TOTALBTD	Total book-tax differences computed as permanent book-tax differences (Compustat PI - MII) less domestic plus foreign tax expense, less deferred taxes (Compustat TXDI) scaled by 0.35, then scaled by lagged total assets.
DTAX	Discretionary permanent book-tax differences is computed following Frank et al. (2009, p. 473).
SHELTER	Tax shelter prediction score from Wilson (2009, p.988), defined as $-4.86 + 5.20 * BTD + 4.08 * \|ACC\| - 1.41 * LEV + 0.76 * SIZE + 3.51 * ROA + 1.72 * FI + 2.43 * R\&D$
A.2. Independent Variables	
Island director	Equals one if the firm has an island director, zero otherwise.
Island firm	Equals one if the firm has ever had an island director, zero otherwise.
Island director tenure	Number of years the island director has been serving on the board.
A.3. Control Variables	
Board size	Natural logarithm of the number directors serving on the board.
Percentage of independent directors	Number of indpendent directors divided by total number of directors.
Percentage ownership by blockholders	Percentage of shares owned by shareholders who own at least 5% of the outstanding shares.
Percentage ownership by insiders	Percentage of shares owned by employees and executives.
Percentage ownership by institutions	Percentage of shares owned by institutional investors.
CEO is chair	Equals one if the CEO is chair of the board, zero otherwise.
Pretax return on assets	Return on assets equals pretax book income (Compustat $PI_{i,t}$) divided by lagged total assets (Compustat $AT_{i,t-1}$)
Pretax discretionary accruals	Performance-matched pretax discretionary accruals is computed following the procedures in Frank et al. (2009).

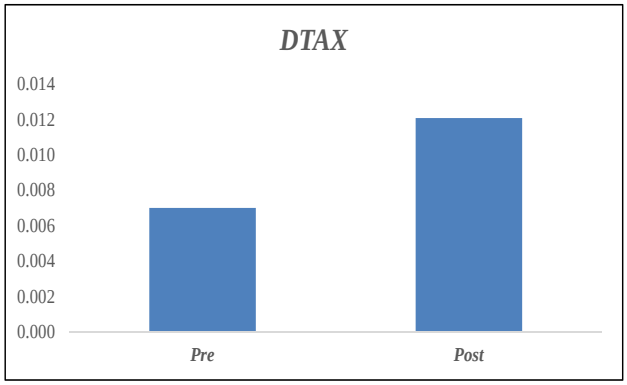
Variable	Definition
Firm size	Firm size is computed as the natural logarithm of lagged total market value of equity (Compustat PRCC_F$_{i,t-1}$*CSHO$_{i,t-1}$).
Foreign income	Equals one if the pretax foreign income (Compustat PIFO) is positive, zero otherwise.
Equity income	Equals one if equity in earnings is positive (Compustat ESUB), zero otherwise.
Intangibles	Intangibles (Compustat INTAN$_{i,t}$) divided by lagged total assets (Compustat AT$_{i,t-1}$).
PPE	Net property, plant and equipment (Compustat PPENT$_{i,t}$) divided by lagged total assets (Compustat AT$_{i,t}$).
NOL	An indicator variable equal to one if the firm reports a positive tax loss carryforward during the year (Compustat TLCF$_{i,t}$)
ΔNOL	The change in firm i's NOL during the year scaled by lagged total assets (Compustat AT$_{i,t-1}$).
MTB	Market-to-book ratio equals the ratio of lagged market value of equity (Compustat PRCC_F$_{i,t-1}$*CSHO$_{i,t-1}$) to lagged book value of equity (Compustat CEQ$_{i,t-1}$).
Leverage	Long-term debt (Compustat DLTT$_{i,t}$) divided by lagged total assets (Compustat AT$_{i,t-1}$).
Free cash flow	Free cash flow equals operating cash flow minus capital expenditures (Compustat OANCF$_{i,t}$ - CAPX$_{i,t}$) scaled by lagged total assets (Compustat AT$_{i,t-1}$).
R&D	Research and development activity equals R&D expense (Compustat XRD$_{i,t}$) by lagged total assets (Compustat AT$_{i,t-1}$)
Tax haven	Equals one if the firm has reported a material subsidiary in a known tax haven within the last three fiscal years, zero otherwise.

Fig. 1: The figure shows average level of tax avoidance before (*pre*) and after (*post*) the arrival of an island director. Island directors are directors of U.S. firms who also serve on the boards of firms domiciled in island tax havens. The tax avoidance measures are the average book effective tax rate (ETR), average cash effective tax rate (CETR), average total book tax differences (TOTALBTD), average discretionary permanent book-tax difference (DTAX) and average tax shelter use prediction score (SHELTER).









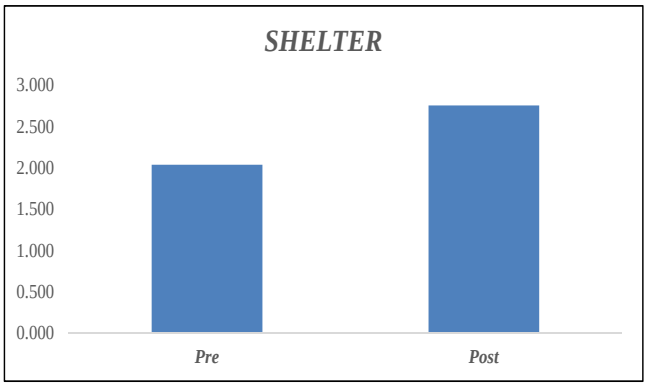


Fig. 2: The endogenous effect of similar operating strategy on tax policy and the exogenous effect of island directors

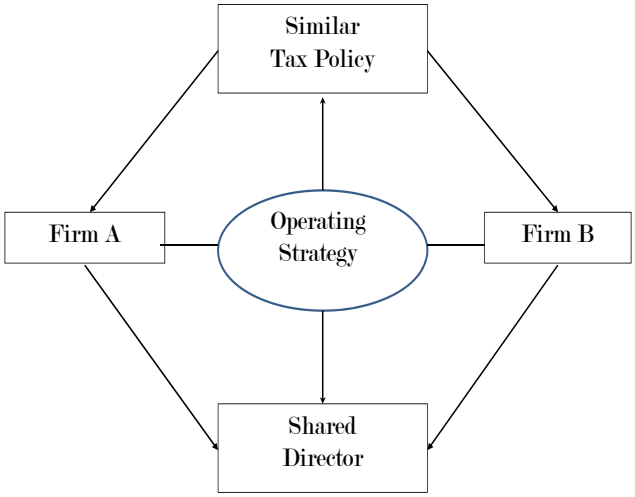


Figure 2(a). The endogenous relationship between tax policy, operating strategy and shared directors

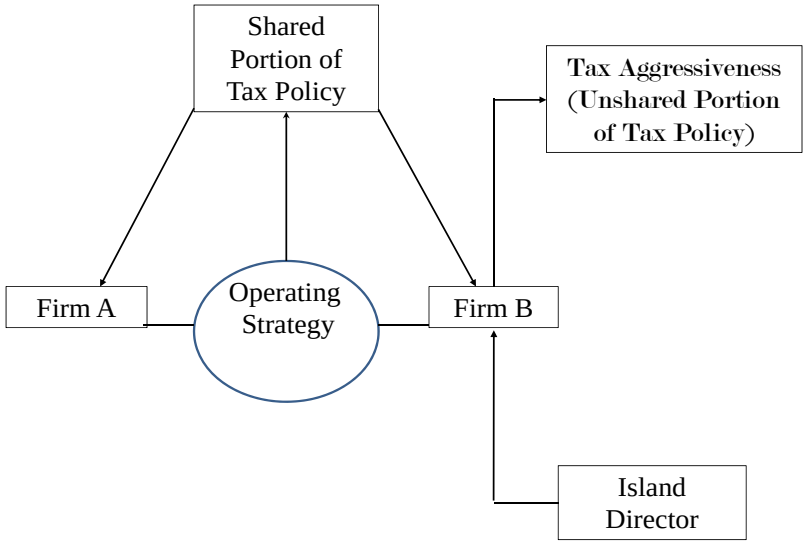


Figure 2(b). The exogenous effect of an island director on a firm's tax policy

Table 1

Sample composition

The table shows a summary of the distribution of firms with and without island directors over time and across industries

Panel A: Distribution of firms with/out island directors through time

Fiscal year	Island director = 0	Island director = 1	Total
1994	1,951	31	1,982
1995	1,967	40	2,007
1996	1,959	45	2,004
1997	2,009	46	2,055
1998	2,000	44	2,044
1999	1,982	70	2,052
2000	1,781	85	1,866
2001	1,324	102	1,426
2002	1,393	100	1,493
2003	1,462	133	1,595
2004	1,633	170	1,803
2005	1,607	205	1,812
2006	1,339	195	1,534
2007	1,379	247	1,626
2008	1,119	210	1,329
2009	1,025	190	1,215
2010	1,121	227	1,348
Total	27,051	2,140	29,191

Panel B: Industry distribution (with/out island directors)

One-digit SIC	Island director = 1	%	Island director = 0	%	Total
0-1 (Agriculture, mining, oil and construction)	225	10.51%	1,293	4.78%	1,518
2 (Food, tobacco, textiles, paper and chemicals)	489	22.85%	4,873	18.01%	5,362
3 (Manufacturing, machinery and electronics)	731	34.16%	9,972	36.86%	10,703
4 (Transportation and communications)	82	3.83%	1,333	4.93%	1,415
5 (Wholesale and retail)	235	10.98%	4,374	16.17%	4,609
7 (Services)	256	11.96%	3,621	13.39%	3,877
8-9 (Health, legal and educational services and other)	122	5.70%	1,585	5.86%	1,707
Total	2,140		27,051		29,191

Table 2

Descriptive statistics.

This table reports summary statistics for the variables used in the empirical analyses. All variable definitions are as defined in the appendix. All continuous variables are winsorized at the 1% and 99% levels to mitigate the influence of outliers.

Variable	N	Mean	Std Dev.	10th Pctl	50th Pctl	90th Pctl
ETR	29,191	0.336	0.115	0.181	0.362	0.422
CETR	29,191	0.257	0.166	0.032	0.259	0.453
TOTALBTD	29,191	0.029	0.052	-0.019	0.020	0.087
DTAX	29,191	0.015	0.093	-0.060	0.002	0.101
SHELTER	29,191	0.893	1.980	-1.553	0.685	3.592
Island director	29,191	0.073	0.261	0.000	0.000	0.000
Board size	29,191	2.022	0.327	1.609	2.079	2.485
Percentage of independent directors	29,191	0.712	0.166	0.500	0.750	0.889
Percentage ownership by blockholders	29,191	0.386	0.263	0.053	0.353	0.761
Percentage ownership by insiders	29,191	0.148	0.204	0.001	0.052	0.451
Percentage ownership by institutions	29,191	0.500	0.315	0.032	0.529	0.916
CEO is chair	29,191	0.595	0.491	0.000	1.000	1.000
Pretax return on assets	29,191	0.136	0.104	0.034	0.111	0.267
Pretax discretionary accruals	29,191	0.003	0.085	-0.084	0.000	0.094
Firm size	29,191	5.992	2.102	3.248	6.004	8.706
Foreign income	29,191	0.364	0.481	0.000	0.000	1.000
Equity income	29,191	0.134	0.341	0.000	0.000	1.000
Intangibles	29,191	0.158	0.220	0.000	0.064	0.459
PPE	29,191	0.317	0.267	0.056	0.242	0.705
NOL	29,191	0.294	0.455	0.000	0.000	1.000
Δ NOL	29,191	-0.002	0.051	-0.013	0.000	0.008
MTB	29,191	3.148	3.115	0.946	2.250	6.029
Leverage	29,191	0.184	0.211	0.000	0.129	0.452
Free cash flow	29,191	0.049	0.117	-0.078	0.054	0.174
R&D	29,191	0.032	0.058	0.000	0.000	0.113
Tax haven	29,191	0.295	0.456	0.000	0.000	1.000
Pretax income ($)	29,191	309.19	1,641.06	2.19	30.94	458.90
Lagged assets ($)	29,191	2,853.45	17,467.84	25.77	285.79	4,247.11

Table 3

Univariate differences.

This table presents mean and median values of the variables used to specify our multivariate models for firms with (Island director = 1) and without (Island director = 0) directors from the Bahamas, Bermuda, or the Cayman Islands. The last two columns report *p*-values (two-sided) based on *t*-tests and Wilcoxon rank sums tests of differences in means and medians, respectively. All variables are defined in the appendix.

	Island director = 1			Island director = 0				
Variable	N	Mean	Median	N	Mean	Median	t-test	Wilcoxon test
ETR	2,140	0.321	0.335	27,051	0.337	0.364	<.0001	<.0001
CETR	2,140	0.233	0.226	27,051	0.259	0.262	<.0001	<.0001
TOTALBTD	2,140	0.036	0.027	27,051	0.029	0.020	<.0001	<.0001
DTAX	2,140	0.014	0.004	27,051	0.015	0.002	0.826	0.219
SHELTER	2,140	2.663	2.735	27,051	0.753	0.542	<.0001	<.0001
Board size	2,140	2.208	2.197	27,051	2.007	1.946	<.0001	<.0001
Percentage of independent directors	2,140	0.814	0.857	27,051	0.703	0.750	<.0001	<.0001
Percentage ownership by blockholders	2,140	0.353	0.321	27,051	0.389	0.357	<.0001	<.0001
Percentage ownership by insiders	2,140	0.068	0.010	27,051	0.155	0.059	<.0001	<.0001
Percentage ownership by institutions	2,140	0.718	0.790	27,051	0.483	0.500	<.0001	<.0001
CEO is chair	2,140	0.644	1.000	27,051	0.591	1.000	<.0001	<.0001
Pretax return on assets	2,140	0.129	0.108	27,051	0.137	0.112	0.000	0.075
Pretax discretionary accruals	2,140	-0.007	-0.004	27,051	0.004	0.000	<.0001	<.0001
Firm size	2,140	7.878	7.829	27,051	5.842	5.861	<.0001	<.0001
Foreign income	2,140	0.636	1.000	27,051	0.343	0.000	<.0001	<.0001
Equity income	2,140	0.250	0.000	27,051	0.125	0.000	<.0001	<.0001
Intangibles	2,140	0.233	0.177	27,051	0.152	0.057	<.0001	<.0001
PPE	2,140	0.313	0.232	27,051	0.318	0.243	0.454	0.647
NOL	2,140	0.425	0.000	27,051	0.283	0.000	<.0001	<.0001
ΔNOL	2,140	0.001	0.000	27,051	-0.002	0.000	0.010	0.006
MTB	2,140	3.879	2.795	27,051	3.091	2.204	<.0001	<.0001
Leverage	2,140	0.206	0.180	27,051	0.183	0.124	<.0001	<.0001
Free cash flow	2,140	0.070	0.068	27,051	0.047	0.053	<.0001	<.0001
R&D	2,140	0.030	0.009	27,051	0.033	0.000	0.031	<.0001
Tax haven	2,140	0.560	1.000	27,051	0.274	0.000	<.0001	<.0001

Table 4
Correlation matrix of board and tax avoidance variables
Pearson (Spearman) correlation coefficients are reported below (above) the diagonal. **Boldface** coefficients denote significance at the 5% level or less using a two-sided test. All variables are defined in the appendix.

	Variable	1	2	3	4	5	6	7	8	9	10	11	12
1	ETR		**0.35**	**−0.36**	**−0.30**	**−0.15**	**−0.08**	0.01	**−0.12**	**0.08**	**0.12**	**−0.02**	**0.03**
2	CETR	**0.36**		**−0.47**	**−0.18**	**−0.05**	**−0.04**	**0.07**	**−0.04**	**0.03**	**0.06**	0.01	**0.01**
3	TOTALBTD	**−0.38**	**−0.42**		**0.15**	**0.13**	**0.05**	**−0.05**	**0.05**	**−0.05**	**−0.05**	0.00	0.00
4	DTAX	**−0.34**	**−0.17**	**0.23**		**−0.06**	0.01	**−0.09**	−0.01	**−0.02**	0.00	**−0.12**	**−0.03**
5	SHELTER	**−0.04**	**−0.06**	**0.14**	**−0.04**		**0.24**	**0.46**	**0.40**	**−0.11**	**−0.39**	**0.56**	**0.07**
6	Island director	**−0.04**	**−0.04**	**0.04**	0.00	**0.25**		**0.16**	**0.20**	**−0.04**	**−0.16**	**0.20**	**0.03**
7	Board size	**0.08**	**0.06**	**−0.07**	**−0.10**	**0.46**	**0.16**		**0.37**	**−0.08**	**−0.23**	**0.31**	**0.03**
8	Percentage of independent directors	**−0.05**	**−0.05**	**0.04**	**−0.03**	**0.37**	**0.17**	**0.37**		**−0.11**	**−0.34**	**0.38**	**0.08**
9	Percentage ownership by blockholders	**0.05**	**0.03**	**−0.05**	**−0.03**	**−0.12**	**−0.04**	**−0.07**	**−0.10**		**0.30**	**0.11**	**−0.03**
10	Percentage ownership by insiders	**0.05**	**0.05**	**−0.02**	**0.02**	**−0.32**	**−0.11**	**−0.21**	**−0.29**	**0.29**		**−0.31**	−0.01
11	Percentage ownership by institutions	**0.07**	0.00	**−0.05**	**−0.14**	**0.54**	**0.19**	**0.32**	**0.37**	**0.07**	**−0.36**		**0.06**
12	CEO is chair	**0.04**	0.01	**−0.02**	**−0.03**	**0.08**	**0.03**	**0.03**	**0.07**	**−0.03**	−0.01	**0.06**	

Table 5

The effect of island directors on tax aggressiveness: OLS regressions

The table presents OLS estimates of the effect of having an island director on various measures of tax avoidance. All variables are defined in the appendix. All specifications include industry and time fixed-effects. *p*-values are reported in parentheses. Except for our variable of interest (in boldface and italicized), all *p*-values are two-tailed. *a*, *b* and *c* represent significance at the 1%, 5% and 10% levels respectively.

	(1)	(2)	(3)	(4)	(5)
	ETR	CETR	TOTALBTD	DTAX	SHELTER
Island director	***−0.0108***^{a}	***−0.0097***^{b}	***0.0042***^{a}	***0.0093***^{a}	***0.0790***^{a}
	(0.001)	***(0.019)***	***(0.001)***	***(0.000)***	***(0.000)***
Board size	0.0133^{a}	0.0376^{a}	−0.0038^{b}	−0.0063^{b}	0.1631^{a}
	(0.000)	(0.000)	(0.018)	(0.012)	(0.000)
Percentage of independent directors	−0.0211^{a}	−0.0279^{a}	0.0143^{a}	0.0083^{c}	0.1291^{a}
	(0.001)	(0.002)	(0.000)	(0.072)	(0.000)
Percentage ownership by blockholders	−0.0025	0.0062	−0.0006	−0.0060^{b}	0.0171
	(0.488)	(0.216)	(0.697)	(0.022)	(0.392)
Percentage ownership by insiders	0.0170^{a}	0.0133^{b}	−0.0069^{a}	−0.0120^{a}	−0.1684^{a}
	(0.001)	(0.050)	(0.001)	(0.001)	(0.000)
Percentage ownership by institutions	0.0341^{a}	0.0068	−0.0096^{a}	−0.0257^{a}	−0.0996^{a}
	(0.000)	(0.218)	(0.000)	(0.000)	(0.000)
CEO is chair	0.0034^{c}	0.0010	−0.0008	−0.0005	0.0339^{a}
	(0.056)	(0.690)	(0.298)	(0.696)	(0.001)
Pretax return on assets	0.1261^{a}	0.2657^{a}	0.1252^{a}	−0.1055^{a}	1.9103^{a}
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Pretax discretionary accruals	−0.2115^{a}	−0.3800^{a}	0.1090^{a}	0.2083^{a}	1.6087^{a}
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Firm size	0.0032^{a}	−0.0014	−0.0013^{a}	−0.0074^{a}	0.5960^{a}
	(0.000)	(0.171)	(0.000)	(0.000)	(0.000)
Foreign income	−0.0107^{a}	0.0040	0.0017	0.0041^{a}	1.7628^{a}
	(0.000)	(0.198)	(0.127)	(0.009)	(0.000)
Equity income	−0.0092^{a}	0.0079^{b}	−0.0001	−0.0079^{a}	0.0944^{a}
	(0.001)	(0.032)	(0.959)	(0.000)	(0.000)
Intangibles	0.0119^{b}	−0.0094	0.0040	0.0936^{a}	−0.0075
	(0.027)	(0.189)	(0.107)	(0.000)	(0.817)
PPE	−0.0237^{a}	−0.0969^{a}	0.0275^{a}	0.0208^{a}	0.0827^{b}
	(0.000)	(0.000)	(0.000)	(0.000)	(0.025)
NOL	−0.0211^{a}	−0.0474^{a}	0.0121^{a}	0.0111^{a}	0.1143^{a}
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ΔNOL	0.1376^{a}	0.2181^{a}	−0.1163^{a}	0.1561^{a}	6.2622^{a}
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
MTB	−0.0029^{a}	−0.0040^{a}	0.0004	0.0021^{a}	−0.0336^{a}
	(0.000)	(0.000)	(0.110)	(0.000)	(0.000)
Leverage	0.0310^{a}	−0.0306^{a}	0.0068^{a}	−0.0188^{a}	−0.1522^{a}
	(0.000)	(0.000)	(0.006)	(0.000)	(0.000)
Free cash flow	−0.1029^{a}	−0.2943^{a}	0.0566^{a}	0.0953^{a}	0.4175^{a}
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
R&D	−0.2896^{a}	−0.4356^{a}	0.0549^{a}	0.2128^{a}	1.9917^{a}
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Tax haven	−0.0025	0.0099^{a}	−0.0029^{a}	0.0023	0.0575^{a}
	(0.268)	(0.001)	(0.005)	(0.135)	(0.000)
Constant	0.3129^{a}	0.2713^{a}	0.0096	0.0480^{a}	−3.9759^{a}
	(0.000)	(0.000)	(0.297)	(0.000)	(0.000)
Observations	29,191	29,191	29,191	29,191	29,191
R-squared	0.150	0.161	0.219	0.135	0.920

Table 6

The effect of island directors on tax aggressiveness: changes (first-difference) regressions

The table presents first-difference estimates of the effect of having an island director on various measures of tax avoidance. All variables are defined in the appendix. All specifications include industry and time fixed effects. *p*-values are reported in parentheses. Except for our variable of interest (in boldface and italicized), all *p*-values are two-tailed. *a*, *b* and *c* represent significance at the 1%, 5% and 10% levels respectively.

	(1)	(2)	(3)	(4)	(5)
	ΔETR	ΔCETR	ΔTOTALBTD	ΔDTAX	ΔSHELTER
Island director	***−0.0069***^{a}	***−0.0149***^{a}	***0.0020***^{b}	***0.0038***^{b}	***0.0538***^{a}
	(0.001)	***(0.000)***	***(0.036)***	***(0.046)***	***(0.000)***
ΔBoard size	−0.0055^{c}	−0.0119^{b}	0.0012	0.0001	0.0190
	(0.051)	(0.025)	(0.400)	(0.981)	(0.333)
ΔPercentage of independent directors	0.0130^{b}	0.0153	−0.0019	0.0084	−0.0141
	(0.013)	(0.117)	(0.486)	(0.112)	(0.716)
ΔPercentage ownership by blockholders	−0.0042	−0.0078	−0.0017	−0.0011	−0.0308
	(0.229)	(0.188)	(0.374)	(0.749)	(0.191)
ΔPercentage ownership by insiders	−0.0074^{c}	0.0053	0.0001	0.0067	−0.0428
	(0.056)	(0.509)	(0.969)	(0.140)	(0.157)
ΔPercentage ownership by institutions	0.0038	−0.0060	0.0005	−0.0087^{b}	0.0186
	(0.336)	(0.399)	(0.847)	(0.046)	(0.508)
ΔCEO is chair	−0.0003	0.0005	0.0003	0.0027^{c}	0.0067
	(0.883)	(0.863)	(0.674)	(0.071)	(0.566)
ΔPretax return on assets	−0.0966^{a}	−0.0751^{a}	0.1891^{a}	0.0296^{b}	4.1471^{a}
	(0.000)	(0.000)	(0.000)	(0.020)	(0.000)
ΔPretax discretionary accruals	−0.0195^{b}	−0.2701^{a}	0.0450^{a}	0.0209^{b}	0.7245^{a}
	(0.023)	(0.000)	(0.000)	(0.046)	(0.000)
ΔFirm size	0.0009	−0.0201^{a}	−0.0030^{a}	−0.0016	0.0643^{a}
	(0.590)	(0.000)	(0.001)	(0.348)	(0.000)
ΔForeign income	−0.0123^{a}	−0.0101^{b}	0.0017	0.0013	1.7205^{a}
	(0.000)	(0.015)	(0.208)	(0.575)	(0.000)
ΔEquity income	−0.0064^{b}	−0.0078	0.0004	−0.0026	−0.0158
	(0.038)	(0.117)	(0.738)	(0.322)	(0.309)
ΔIntangibles	0.0149^{b}	0.0098	−0.0015	0.0492^{a}	0.2319^{a}
	(0.011)	(0.252)	(0.678)	(0.000)	(0.000)
ΔPPE	0.0072	−0.0376^{a}	0.0164^{a}	0.0056	0.4249^{a}
	(0.292)	(0.007)	(0.003)	(0.466)	(0.000)
ΔNOL	−0.0039	0.0005	0.0014	0.0041^{c}	0.0524^{a}
	(0.115)	(0.892)	(0.279)	(0.091)	(0.004)
Δ(ΔNOL)	0.0373^{a}	0.0611^{a}	−0.0330^{a}	0.0939^{a}	6.3030^{a}
	(0.009)	(0.000)	(0.000)	(0.000)	(0.000)
ΔMTB	0.0005	−0.0007	−0.0003	−0.0002	0.0004
	(0.178)	(0.192)	(0.224)	(0.705)	(0.883)
ΔLeverage	0.0020	0.0056	−0.0006	−0.0046	−0.4770^{a}
	(0.706)	(0.491)	(0.861)	(0.469)	(0.000)
ΔFree cash flow	0.0009	−0.3091^{a}	0.0277^{a}	0.0185^{b}	0.2684^{a}
	(0.898)	(0.000)	(0.000)	(0.033)	(0.001)
ΔR&D	0.3280^{a}	−0.0137	−0.1839^{a}	−0.0604	1.3036^{a}
	(0.000)	(0.830)	(0.000)	(0.155)	(0.000)
ΔTax haven	−0.0009	−0.0035	−0.0024^{c}	−0.0002	0.0093
	(0.746)	(0.412)	(0.089)	(0.935)	(0.584)
Lagged Tax Avoidance	−0.4548^{a}	−0.6098^{a}	−0.4882^{a}	−0.7867^{a}	−0.0326^{a}
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	0.1343^{a}	0.1677^{a}	0.0159^{a}	0.0050	0.0362
	(0.000)	(0.000)	(0.000)	(0.431)	(0.459)
Observations	19,836	19,836	19,836	19,836	19,836
R-squared	0.264	0.358	0.406	0.469	0.666

Table 7

The effect of island directors on tax aggressiveness: difference-in-differences regressions

The table presents difference-in-differences estimates of the effect of having an island director on various measures of tax avoidance. $Islandfirm$ is an indicator variable that equals one if the firm had an island director at any point during the sample period, and is zero otherwise. $Post$ is a variable that equals one in any year after the appointment of an island director, and is zero otherwise. All other variables are defined in the appendix. All specifications include industry and time fixed effects. *p*-values are reported in parentheses. Except for our variable of interest (in boldface and italicized), all *p*-values are two-tailed. *a*, *b* and *c* represent significance at the 1%, 5% and 10% levels respectively.

	(1)	(2)	(3)	(4)	(5)
	ETR	CETR	TOTALBTD	DTAX	SHELTER
Island firm	0.0024	0.0009	−0.0003	0.0033	0.0623^{a}
	(0.446)	(0.849)	(0.860)	(0.140)	(0.002)
Post	***−0.0172***^{a}	***−0.0117***^{a}	***0.0057***^{a}	***0.0083***^{a}	***0.0388***^{b}
	(0.000)	***(0.0015)***	***(0.002)***	***(0.002)***	***(0.044)***
Board size	0.0135^{a}	0.0377^{a}	-0.0039^{b}	-0.0065^{a}	0.1606^{a}
	(0.000)	(0.000)	(0.015)	(0.009)	(0.000)
Percentage of independent directors	-0.0211^{a}	-0.0279^{a}	0.0143^{a}	0.0082^{c}	0.1274^{a}
	(0.001)	(0.001)	(0.000)	(0.075)	(0.000)
Percentage ownership by blockholders	−0.0024	0.0062	−0.0006	-0.0060^{b}	0.0173
	(0.500)	(0.213)	(0.688)	(0.022)	(0.387)
Percentage ownership by insiders	0.0173^{a}	0.0134^{b}	-0.0070^{a}	-0.0119^{a}	-0.1659^{a}
	(0.000)	(0.048)	(0.001)	(0.001)	(0.000)
Percentage ownership by institutions	0.0342^{a}	0.0067	-0.0096^{a}	-0.0255^{a}	-0.0965^{a}
	(0.000)	(0.221)	(0.000)	(0.000)	(0.000)
CEO is chair	0.0035^{b}	0.0011	−0.0009	−0.0006	0.0332^{a}
	(0.050)	(0.675)	(0.281)	(0.654)	(0.001)
Pretax return on assets	0.1254^{a}	0.2653^{a}	0.1255^{a}	-0.1047^{a}	1.9202^{a}
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Pretax discretionary accruals	-0.2111^{a}	-0.3798^{a}	0.1089^{a}	0.2081^{a}	1.6069^{a}
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Firm size	0.0033^{a}	−0.0014	-0.0014^{a}	-0.0076^{a}	0.5929^{a}
	(0.000)	(0.200)	(0.000)	(0.000)	(0.000)
Foreign income	-0.0107^{a}	0.0040	0.0017	0.0040^{b}	1.7606^{a}
	(0.000)	(0.198)	(0.132)	(0.011)	(0.000)
Equity income	-0.0090^{a}	0.0081^{b}	−0.0001	-0.0081^{a}	0.0923^{a}
	(0.001)	(0.029)	(0.903)	(0.000)	(0.000)
Intangibles	0.0120^{b}	−0.0094	0.0040	0.0935^{a}	−0.0089
	(0.025)	(0.192)	(0.112)	(0.000)	(0.783)
PPE	-0.0240^{a}	-0.0970^{a}	0.0276^{a}	0.0209^{a}	0.0831^{b}
	(0.000)	(0.000)	(0.000)	(0.000)	(0.024)
NOL	-0.0211^{a}	-0.0474^{a}	0.0120^{a}	0.0110^{a}	0.1137^{a}
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ΔNOL	0.1378^{a}	0.2182^{a}	-0.1163^{a}	0.1563^{a}	6.2658^{a}
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
MTB	-0.0029^{a}	-0.0040^{a}	0.0004	0.0021^{a}	-0.0336^{a}
	(0.000)	(0.000)	(0.111)	(0.000)	(0.000)
Leverage	0.0312^{a}	-0.0305^{a}	0.0068^{a}	-0.0189^{a}	-0.1531^{a}
	(0.000)	(0.000)	(0.006)	(0.000)	(0.000)
Free cash flow	-0.1029^{a}	-0.2943^{a}	0.0566^{a}	0.0950^{a}	0.4124^{a}
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
R&D	-0.2900^{a}	-0.4356^{a}	0.0550^{a}	0.2130^{a}	1.9932^{a}
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Tax haven	−0.0022	0.0100^{a}	-0.0029^{a}	0.0021	0.0564^{a}
	(0.314)	(0.001)	(0.004)	(0.161)	(0.000)
Constant	0.3130^{a}	0.2713^{a}	0.0098	0.0496^{a}	-3.9510^{a}
	(0.000)	(0.000)	(0.291)	(0.000)	(0.000)
Observations	29,191	29,191	29,191	29,191	29,191
R-squared	0.151	0.161	0.220	0.136	0.920

Table 8

The effect of island directors on tax aggressiveness: difference-in-differences regressions with firm fixed effects
The table presents difference-in-differences estimates of the effect of having an island director on various measures of tax avoidance. *Post* is a variable that equals one in any year after the appointment of an island director, and is zero otherwise. All other variables are defined in the appendix. All specifications include firm and time fixed effects. *p*-values are reported in parentheses. Except for our variable of interest (in boldface and italicized), all *p*-values are two-tailed. *a*, *b* and *c* represent significance at the 1%, 5% and 10% levels respectively.

	(1)	(2)	(3)	(4)	(5)
	ETR	CETR	TOTALBTD	DTAX	SHELTER
Post	***−0.0150***^{a}	***−0.0071***^{c}	***0.0032***^{b}	***0.0086***^{a}	***0.0264***^{c}
	(0.000)	***(0.086)***	***(0.018)***	***(0.003)***	***(0.053)***
Board size	0.0031	0.0077	0.0021	−0.0030	0.1088^{a}
	(0.347)	(0.124)	(0.149)	(0.323)	(0.000)
Percentage of independent directors	0.0026	−0.0032	0.0004	−0.0005	0.0000
	(0.638)	(0.708)	(0.869)	(0.920)	(0.999)
Percentage ownership by blockholders	−0.0100^{a}	−0.0048	−0.0008	0.0014	−0.0674^{a}
	(0.002)	(0.329)	(0.587)	(0.631)	(0.000)
Percentage ownership by insiders	−0.0047	−0.0125^{c}	0.0030	−0.0005	−0.0928^{a}
	(0.276)	(0.062)	(0.118)	(0.907)	(0.000)
Percentage ownership by institutions	0.0209^{a}	0.0150^{b}	−0.0073^{a}	−0.0248^{a}	0.1375^{a}
	(0.000)	(0.016)	(0.000)	(0.000)	(0.000)
CEO is chair	0.0076^{a}	0.0070^{a}	−0.0034^{a}	−0.0015	−0.0104
	(0.000)	(0.005)	(0.000)	(0.298)	(0.183)
Pretax return on assets	0.0232^{b}	0.1472^{a}	0.1801^{a}	−0.0724^{a}	3.2179^{a}
	(0.013)	(0.000)	(0.000)	(0.000)	(0.000)
Pretax discretionary accruals	−0.1106^{a}	−0.3915^{a}	0.0957^{a}	0.1065^{a}	1.0460^{a}
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Firm size	0.0109^{a}	0.0003	−0.0050^{a}	−0.0086^{a}	0.2991^{a}
	(0.000)	(0.860)	(0.000)	(0.000)	(0.000)
Foreign income	−0.0122^{a}	−0.0124^{a}	0.0047^{a}	0.0021	1.7632^{a}
	(0.000)	(0.000)	(0.000)	(0.299)	(0.000)
Equity income	−0.0079^{a}	−0.0072^{c}	−0.0011	−0.0044^{c}	−0.0086
	(0.002)	(0.069)	(0.351)	(0.064)	(0.491)
Intangibles	0.0084^{c}	0.0158^{b}	0.0019	0.0808^{a}	0.3184^{a}
	(0.089)	(0.040)	(0.388)	(0.000)	(0.000)
PPE	0.0001	−0.0916^{a}	0.0244^{a}	0.0270^{a}	0.2048^{a}
	(0.987)	(0.000)	(0.000)	(0.000)	(0.000)
NOL	−0.0205^{a}	−0.0367^{a}	0.0112^{a}	0.0100^{a}	0.0676^{a}
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ΔNOL	0.1082^{a}	0.1512^{a}	−0.0902^{a}	0.1619^{a}	6.2404^{a}
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
MTB	−0.0014^{a}	−0.0012^{a}	−0.0002^{c}	0.0010^{a}	−0.0181^{a}
	(0.000)	(0.004)	(0.076)	(0.000)	(0.000)
Leverage	0.0123^{b}	−0.0176^{b}	0.0007	−0.0052	−0.4226^{a}
	(0.013)	(0.021)	(0.763)	(0.252)	(0.000)
Free cash flow	−0.0683^{a}	−0.4048^{a}	0.0614^{a}	0.0767^{a}	0.3806^{a}
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
R&D	0.0043	−0.1016^{b}	−0.0974^{a}	0.1825^{a}	1.0346^{a}
	(0.882)	(0.023)	(0.000)	(0.000)	(0.000)
Tax haven	−0.0005	0.0069^{b}	−0.0016^{c}	−0.0013	0.0489^{a}
	(0.800)	(0.031)	(0.086)	(0.485)	(0.000)
Constant	0.2779^{a}	0.2916^{a}	0.0141^{a}	0.0565^{a}	−2.5808^{a}
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	29,191	29,191	29,191	29,191	29,191
R-squared	0.566	0.501	0.576	0.445	0.965

Table 9

Island director tenure and tax aggressiveness: OLS regressions

The table presents OLS estimates of the effect of island director tenure on various measures of tax avoidance. All variables are defined in the appendix. All specifications include industry and time fixed-effects. *p*-values are reported in parentheses. Except for our variable of interest (in boldface and italicized), all *p*-values are two-tailed. *a*, *b* and *c* represent significance at the 1%, 5% and 10% levels respectively.

	(1)	(2)	(3)	(4)	(5)
	ETR	CETR	TOTALBTD	DTAX	SHELTER
Island director	−0.0020	−0.0054	0.0015	0.0051^{b}	0.0414^{b}
	(0.590)	(0.280)	(0.432)	(0.050)	(0.041)
Island director tenure	***−0.0021***^{a}	***−0.0010***^{b}	***0.0006***^{a}	***0.0010***^{a}	***0.0091***^{a}
	(0.000)	***(0.038)***	***(0.003)***	***(0.001)***	***(0.000)***
Board size	0.0138^{a}	0.0378^{a}	−0.0040^{b}	−0.0066^{a}	0.1608^{a}
	(0.000)	(0.000)	(0.014)	(0.009)	(0.000)
Percentage of independent directors	−0.0220^{a}	−0.0283^{a}	0.0146^{a}	0.0087^{c}	0.1329^{a}
	(0.000)	(0.001)	(0.000)	(0.059)	(0.000)
Percentage ownership by blockholders	−0.0024	0.0062	−0.0007	−0.0061^{b}	0.0165
	(0.509)	(0.211)	(0.679)	(0.021)	(0.407)
Percentage ownership by insiders	0.0175^{a}	0.0135^{b}	−0.0070^{a}	−0.0122^{a}	−0.1706^{a}
	(0.000)	(0.046)	(0.001)	(0.000)	(0.000)
Percentage ownership by institutions	0.0339^{a}	0.0066	−0.0095^{a}	−0.0256^{a}	−0.0984^{a}
	(0.000)	(0.227)	(0.000)	(0.000)	(0.000)
CEO is chair	0.0037^{b}	0.0011	−0.0009	−0.0006	0.0329^{a}
	(0.041)	(0.656)	(0.258)	(0.629)	(0.001)
Pretax return on assets	0.1256^{a}	0.2655^{a}	0.1253^{a}	−0.1053^{a}	1.9122^{a}
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Pretax discretionary accruals	−0.2112^{a}	−0.3799^{a}	0.1089^{a}	0.2081^{a}	1.6070^{a}
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Firm size	0.0035^{a}	−0.0013	−0.0014^{a}	−0.0075^{a}	0.5946^{a}
	(0.000)	(0.223)	(0.000)	(0.000)	(0.000)
Foreign income	−0.0108^{a}	0.0040	0.0017	0.0041^{a}	1.7630^{a}
	(0.000)	(0.200)	(0.123)	(0.009)	(0.000)
Equity income	−0.0088^{a}	0.0081^{b}	−0.0002	−0.0081^{a}	0.0925^{a}
	(0.001)	(0.028)	(0.873)	(0.000)	(0.000)
Intangibles	0.0118^{b}	−0.0095	0.0041	0.0937^{a}	−0.0071
	(0.028)	(0.186)	(0.104)	(0.000)	(0.826)
PPE	−0.0243^{a}	−0.0972^{a}	0.0277^{a}	0.0211^{a}	0.0854^{b}
	(0.000)	(0.000)	(0.000)	(0.000)	(0.021)
NOL	−0.0213^{a}	−0.0475^{a}	0.0121^{a}	0.0111^{a}	0.1150^{a}
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ΔNOL	0.1374^{a}	0.2180^{a}	−0.1162^{a}	0.1562^{a}	6.2630^{a}
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
MTB	−0.0029^{a}	−0.0040^{a}	0.0004	0.0021^{a}	−0.0336^{a}
	(0.000)	(0.000)	(0.109)	(0.000)	(0.000)
Leverage	0.0309^{a}	−0.0306^{a}	0.0069^{a}	−0.0187^{a}	−0.1518^{a}
	(0.000)	(0.000)	(0.006)	(0.000)	(0.000)
Free cash flow	−0.1026^{a}	−0.2942^{a}	0.0565^{a}	0.0952^{a}	0.4163^{a}
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
R&D	−0.2883^{a}	−0.4349^{a}	0.0545^{a}	0.2122^{a}	1.9860^{a}
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Tax haven	−0.0020	0.0101^{a}	−0.0030^{a}	0.0021	0.0557^{a}
	(0.359)	(0.001)	(0.003)	(0.174)	(0.000)
Constant	0.3122^{a}	0.2710^{a}	0.0098	0.0484^{a}	−3.9728^{a}
	(0.000)	(0.000)	(0.285)	(0.000)	(0.000)
Observations	29,191	29,191	29,191	29,191	29,191
R-squared	0.151	0.161	0.220	0.136	0.920

Table 10

Island director tenure and tax aggressiveness: difference-in-differences regressions

The table presents difference-in-differences estimates of the effect of having an island director on various measures of tax avoidance. $Islandfirm$ is an indicator variable that equals one if the firm had an island director at any point during the sample period, and is zero otherwise. $Post$ is a variable that equals one in any year after the appointment of an island director, and is zero otherwise. All other variables are defined in the appendix. All specifications include industry and time fixed effects. p-values are reported in parentheses. Except for our variable of interest (in boldface and italicized), all p-values are two-tailed. a, b and c represent significance at the 1%, 5% and 10% levels respectively.

	(1)	(2)	(3)	(4)	(5)
	ETR	CETR	TOTALBTD	DTAX	SHELTER
Island firm	0.0025	0.0009	−0.0003	0.0032	0.0619^{a}
	(0.428)	(0.841)	(0.847)	(0.146)	(0.003)
Post	−0.0081^{c}	−0.0074	0.0031	0.0044	0.0015
	(0.065)	(0.213)	(0.160)	(0.157)	(0.951)
Island director tenure	***−0.0018***^{a}	***−0.0008***^{c}	***0.0005***^{b}	***0.0008***^{b}	***0.0074***^{a}
	(0.000)	***(0.091)***	***(0.021)***	***(0.014)***	***(0.005)***
Board size	0.0138^{a}	0.0379^{a}	−0.0040^{b}	−0.0067^{a}	0.1593^{a}
	(0.000)	(0.000)	(0.013)	(0.008)	(0.000)
Percentage of independent directors	−0.0219^{a}	−0.0283^{a}	0.0145^{a}	0.0085^{c}	0.1306^{a}
	(0.000)	(0.001)	(0.000)	(0.064)	(0.000)
Percentage ownership by blockholders	−0.0023	0.0062	−0.0007	−0.0061^{b}	0.0169
	(0.514)	(0.210)	(0.677)	(0.021)	(0.396)
Percentage ownership by insiders	0.0176^{a}	0.0136^{b}	−0.0071^{a}	−0.0121^{a}	−0.1673^{a}
	(0.000)	(0.045)	(0.001)	(0.001)	(0.000)
Percentage ownership by institutions	0.0340^{a}	0.0067	−0.0095^{a}	−0.0255^{a}	−0.0958^{a}
	(0.000)	(0.226)	(0.000)	(0.000)	(0.000)
CEO is chair	0.0037^{b}	0.0011	−0.0009	−0.0006	0.0326^{a}
	(0.041)	(0.655)	(0.257)	(0.617)	(0.001)
Pretax return on assets	0.1254^{a}	0.2654^{a}	0.1255^{a}	−0.1047^{a}	1.9198^{a}
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Pretax discretionary accruals	−0.2110^{a}	−0.3798^{a}	0.1088^{a}	0.2080^{a}	1.6064^{a}
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Firm size	0.0035^{a}	−0.0013	−0.0014^{a}	−0.0077^{a}	0.5922^{a}
	(0.000)	(0.227)	(0.000)	(0.000)	(0.000)
Foreign income	−0.0108^{a}	0.0040	0.0017	0.0040^{b}	1.7609^{a}
	(0.000)	(0.202)	(0.126)	(0.011)	(0.000)
Equity income	−0.0088^{a}	0.0082^{b}	−0.0002	−0.0082^{a}	0.0914^{a}
	(0.001)	(0.027)	(0.860)	(0.000)	(0.000)
Intangibles	0.0119^{b}	−0.0094	0.0040	0.0935^{a}	−0.0082
	(0.027)	(0.188)	(0.107)	(0.000)	(0.799)
PPE	−0.0244^{a}	−0.0972^{a}	0.0277^{a}	0.0211^{a}	0.0847^{b}
	(0.000)	(0.000)	(0.000)	(0.000)	(0.022)
NOL	−0.0212^{a}	−0.0475^{a}	0.0121^{a}	0.0111^{a}	0.1143^{a}
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ΔNOL	0.1376^{a}	0.2181^{a}	−0.1163^{a}	0.1564^{a}	6.2666^{a}
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
MTB	−0.0029^{a}	−0.0040^{a}	0.0004	0.0021^{a}	−0.0335^{a}
	(0.000)	(0.000)	(0.110)	(0.000)	(0.000)
Leverage	0.0310^{a}	−0.0306^{a}	0.0068^{a}	−0.0188^{a}	−0.1524^{a}
	(0.000)	(0.000)	(0.006)	(0.000)	(0.000)
Free cash flow	−0.1027^{a}	−0.2942^{a}	0.0565^{a}	0.0949^{a}	0.4118^{a}
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
R&D	−0.2887^{a}	−0.4350^{a}	0.0546^{a}	0.2124^{a}	1.9881^{a}
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Tax haven	−0.0020	0.0101^{a}	−0.0030^{a}	0.0020	0.0554^{a}
	(0.369)	(0.001)	(0.003)	(0.182)	(0.000)
Constant	0.3128^{a}	0.2712^{a}	0.0098	0.0497^{a}	−3.9502^{a}
	(0.000)	(0.000)	(0.286)	(0.000)	(0.000)
Observations	29,191	29,191	29,191	29,191	29,191
R-squared	0.151	0.161	0.220	0.136	0.920

Table 11

Island director tenure and tax aggressiveness: changes (first-difference) regressions

The table presents first-difference estimates of the effect of having an island director on various measures of tax avoidance. All variables are defined in the appendix. All specifications include industry and time fixed effects. *p*-values are reported in parentheses. Except for our variable of interest (in boldface and italicized), all *p*-values are two-tailed. *a*, *b* and *c* represent significance at the 1%, 5% and 10% levels respectively.

Changes	(1)	(2)	(3)	(4)	(5)
	ΔETR	ΔCETR	ΔTOTALBTD	ΔDTAX	ΔSHELTER
Island director	−0.0026	−0.0101^{a}	0.0003	0.0033	0.0325^{a}
	(0.264)	(0.007)	(0.838)	(0.181)	(0.000)
Island director tenure	***−0.0009***^{a}	***−0.0010***^{a}	***0.0004***^{a}	0.0001	***0.0049***^{a}
	(0.001)	***(0.007)***	***(0.005)***	(0.378)	***(0.000)***
ΔBoard size	−0.0055^{c}	−0.0118^{b}	0.0012	0.0001	0.0190
	(0.052)	(0.025)	(0.403)	(0.981)	(0.334)
ΔPercentage of independent directors	0.0129^{b}	0.0152	−0.0018	0.0084	−0.0139
	(0.014)	(0.120)	(0.495)	(0.111)	(0.721)
ΔPercentage ownership by blockholders	−0.0040	−0.0076	−0.0018	−0.0011	−0.0317
	(0.252)	(0.201)	(0.353)	(0.744)	(0.178)
ΔPercentage ownership by insiders	−0.0073^{c}	0.0054	0.0001	0.0067	−0.0429
	(0.058)	(0.503)	(0.978)	(0.141)	(0.156)
ΔPercentage ownership by institutions	0.0037	−0.0062	0.0005	−0.0087^{b}	0.0196
	(0.360)	(0.382)	(0.822)	(0.047)	(0.487)
ΔCEO is chair	−0.0003	0.0005	0.0003	0.0027^{c}	0.0067
	(0.882)	(0.863)	(0.673)	(0.071)	(0.567)
ΔPretax return on assets	−0.0963^{a}	−0.0748^{a}	0.1890^{a}	0.0296^{b}	4.1438^{a}
	(0.000)	(0.000)	(0.000)	(0.020)	(0.000)
ΔPretax discretionary accruals	−0.0194^{b}	−0.2701^{a}	0.0450^{a}	0.0209^{b}	0.7241^{a}
	(0.023)	(0.000)	(0.000)	(0.046)	(0.000)
ΔFirm size	0.0008	−0.0202^{a}	−0.0030^{a}	−0.0016	0.0646^{a}
	(0.618)	(0.000)	(0.001)	(0.350)	(0.000)
ΔForeign income	−0.0123^{a}	−0.0100^{b}	0.0017	0.0013	1.7197^{a}
	(0.000)	(0.015)	(0.209)	(0.575)	(0.000)
ΔEquity income	−0.0065^{b}	−0.0079	0.0005	−0.0026	−0.0155
	(0.036)	(0.114)	(0.726)	(0.323)	(0.319)
ΔIntangibles	0.0148^{b}	0.0098	−0.0015	0.0492^{a}	0.2323^{a}
	(0.011)	(0.254)	(0.681)	(0.000)	(0.000)
ΔPPE	0.0071	−0.0377^{a}	0.0164^{a}	0.0056	0.4246^{a}
	(0.299)	(0.007)	(0.003)	(0.465)	(0.000)
ΔNOL	−0.0039	0.0006	0.0014	0.0041^{c}	0.0526^{a}
	(0.119)	(0.881)	(0.286)	(0.092)	(0.004)
Δ(ΔNOL)	0.0373^{a}	0.0610^{a}	−0.0330^{a}	0.0939^{a}	6.2994^{a}
	(0.009)	(0.000)	(0.000)	(0.000)	(0.000)
ΔMTB	0.0005	−0.0007	−0.0003	−0.0002	0.0004
	(0.178)	(0.191)	(0.225)	(0.706)	(0.877)
ΔLeverage	0.0020	0.0056	−0.0006	−0.0046	−0.4768^{a}
	(0.703)	(0.489)	(0.860)	(0.469)	(0.000)
ΔFree cash flow	0.0010	−0.3090^{a}	0.0277^{a}	0.0185^{b}	0.2679^{a}
	(0.894)	(0.000)	(0.000)	(0.033)	(0.001)
ΔR&D	0.3280^{a}	−0.0137	−0.1839^{a}	−0.0604	1.3008^{a}
	(0.000)	(0.831)	(0.000)	(0.155)	(0.000)
ΔTax haven	−0.0010	−0.0036	−0.0024^{c}	−0.0002	0.0103
	(0.707)	(0.390)	(0.096)	(0.940)	(0.543)
Lagged Tax Avoidance	−0.4557^{a}	−0.6100^{a}	−0.4885^{a}	−0.7867^{a}	−0.0335^{a}
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	0.1355^{a}	0.1687^{a}	0.0155^{a}	0.0049	0.0333
	(0.000)	(0.000)	(0.000)	(0.441)	(0.497)
Observations	19,836	19,836	19,836	19,836	19,836
R-squared	0.265	0.358	0.406	0.469	0.667