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Organizational capital, corporate tax avoidance, and firm value

Mostafa Monzur Hasan [a], Gerald J. Lobo [b,*], Buhui Qiu [c]

[a] Department of Accounting and Corporate Governance, Macquarie Business School, Macquarie University, Sydney, Australia
[b] C.T. Bauer College of Business, University of Houston, Houston, TX 77204-6021, USA
[c] The University of Sydney Business School, University of Sydney, Sydney, NSW 2006, Australia

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ABSTRACT

We show that firms with higher levels of organizational capital (OC) exhibit higher levels of tax avoidance and that shareholders view tax avoidance of high OC firms as value-enhancing. We also show that the OC-tax avoidance relation mainly manifests in firms with good internal governance and information environment and in firms that face tight financial constraints. In addition, we document that tax avoidance by high OC firms increases future cash flow and that high OC firms are more likely to invest in tax haven subsidiaries. Overall, our evidence suggests that OC enhances firms' tax efficiency.

'The avoidance of taxes is the only intellectual pursuit that still carries any reward'.[1]

John Maynard Keynes

1. Introduction

We examine the relationship between organizational capital (OC) and corporate tax avoidance. OC represents a firm's stock of knowledge, capabilities, culture, business processes and systems that facilitate matching of human skills and physical capital to enhance organizational efficiency. In essence, OC is partly embedded within the organization (e.g., organizational knowledge and expertise (Atkeson and Kehoe, 2005), business processes and practices (Evenson and Westphal, 1995), recruiting and training programs, and work design (Black and Lynch, 2005)), and also in the firm's key talents such as managers, engineers, sales people, and research employees (Eisfeldt and Papanikolaou, 2014). The importance of OC is underscored by firms' investments in this resource, which have been growing steadily over the past two decades (Eisfeldt and Papanikolaou, 2014).

Prior research documents that OC is a major driver of both country-level and firm-level growth and competitiveness. At the country level, Atkeson and Kehoe (2005) demonstrate that OC represents more than 40% of the cash flow generated by all intangible assets in the U.S. national income and product accounts. At the firm level, studies show that OC facilitates superior operating, investment and innovation performance, which in turn enhance future operating results, stock return and deal performance (Enache and Srivastava, 2018; Hasan and Cheung, 2018; Lev et al., 2009; Li et al., 2018). The literature also suggests that OC may give rise to agency problems because the joint ownership and property rights governing OC result in both the key talents and the shareholders having claims on the

* Corresponding author.
E-mail addresses: Mostafa.Hasan@mq.edu.au (M.M. Hasan), gjlobo@uh.edu (G.J. Lobo), buhui.qiu@sydney.edu.au (B. Qiu).

[1] As quoted in A Dictionary of Scientific Quotations (1977) by Alan L. MacKay, p. 140.

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cash flow accruing from OC. This cash flow sharing motivates the key talents to utilize OC to maximize their own benefits (Eisfeldt and Papanikolaou (2013, 2014). In this study, we examine whether firms with high OC adopt a tax avoidance strategy that has the potential to increase cash flows and after-tax income.

The steady growth of OC, sheer magnitude of corporate tax avoidance, and their implications for firm-level and economy-wide outcomes provide strong rationale for examining the relationship between OC and corporate tax avoidance. In a recent study, Dyreng et al. (2017) show that corporate tax avoidance has increased markedly over the past 25 years.[2] Tax avoidance costs in the U.S. are estimated to be around $200 billion each year.[3] Nearly 73% of the Fortune 500 companies have one or more subsidiaries in tax haven countries. Academic research has investigated a multitude of firm-level characteristics to understand the cross-sectional differences in corporate tax avoidance. For example, prior research documents that firms use intangible assets, such as patents and trademarks through offshore financial centers (i.e., tax havens) that have corporate tax rates below the U.S. corporate tax rate to increase their after-tax cash flows and earnings (Hanlon and Heitzman, 2010). However, as noted by Dyreng et al. (2017), these characteristics are unable to capture most of the increase in tax avoidance. Despite the evidence that firms in the 'new economy' invest substantially in OC to gain sustainable competitive advantages (Eisfeldt and Papanikolaou, 2014; Quinn et al., 2005), the extent to which firms use OC, an unreported human based stealth asset, in tax planning and strategies is largely unexplored. We attempt to fill this void in the literature.

We predict that OC is positively related to corporate tax avoidance for the following reasons. *First*, tax planning, compliance and implementation are costly, time consuming, and knowledge-intensive undertakings that require devotion of considerable economic resources (Gallemore and Labro, 2015; Hasseldine et al. 2009). OC, as captured by the codified, integrated, and institutionalized firm-specific knowledge about business practice and process, may help firms to better understand the complex corporate tax code and thus to capitalize on differences in tax rates, tax preferences, and tax status in a more efficient way.[4] Therefore, firms with high OC will be better able to avoid more tax and achieve greater tax efficiency. *Second*, although OC is embodied in the firm's key talents, its efficiency is firm specific (Eisfeldt and Papanikolaou, 2013). Therefore, both shareholders and key talents share the cash flows accruing from OC. Since tax avoidance increases cash flows and after-tax income, these increases may motivate firms with high OC to avoid more tax to maximize the benefits to both managers and shareholders.

Because OC is the internally accumulated firm-specific knowledge, expertise, business processes and systems, we follow the literature and capitalize the firm's selling, general and administrative (SG&A) expenses to measure a firm's stock of OC. A large part of SG&A expenses consists of expenses on IT infrastructure, information systems, R&D, employee training, knowledge building, strategy consulting, brand enhancement, and improvement of business processes (e.g., Lev and Radhakrishnan, 2005; Eisfeldt and Papanikolaou, 2013). Eisfeldt and Papanikolaou (2013) and Li et al. (2018) validate the capitalized SG&A-based measure of OC in multiple ways.[5] Taken together, these findings from multiple validation tests support the view that the capitalized SG&A measure is indeed a valid proxy for OC, which represents the firm's internally-accumulated, multi-faceted knowledge, expertise, business processes and systems that facilitate the match between labor and physical capital and allow the firm to use its resources more efficiently to improve its organizational efficiency, including tax efficiency. We use tax avoidance measures that have been used extensively in prior literature (e.g., Cen et al., 2017; Dyreng et al., 2008; Huang et al., 2016).

Using a large sample of U.S. firms from 1986 to 2016, we find a significantly positive relationship between OC and tax avoidance after controlling for firm-level characteristics, year effects, and firm-specific time invariant unobserved heterogeneity, implying that firms with more OC engage in more tax avoidance. In terms of economic significance, our results show that tax avoidance increases by 4.56%–5.61% relative to its mean for a one standard deviation increase in OC depending on the measure of tax avoidance, which amounts to a tax saving of $7.36 million – $9.45 million. Our results are robust to the use of alternative measures of OC and of tax avoidance.

To strengthen our identification strategy and alleviate the endogeneity concerns arising from omitted variable bias and reverse causality, we use multiple estimation techniques. First, following prior studies (e.g., Hasan and Cheung, 2018; Li et al., 2018), we use state-level unemployment benefits and industry median OC (excluding the focal firm) as instruments in a two-stage least-squares instrumental variable regression. Second, we follow Lewbel (2012) and employ an instrumental variable approach with heteroskedasticity-based instruments. Third, we estimate the main regression using entropy balancing. Results from these identification strategies consistently indicate that out findings are unlikely to be driven by endogeneity problems.

Having established that firms with high OC avoid more tax, we next investigate how shareholders value tax avoidance by high OC

[2] Consistent with prior studies (Dyreng et al., 2008), we stress that 'tax avoidance' simply captures activities that result in the reduction of explicit taxes relative to pre-tax income and does not imply any improper or unlawful actions.

[3] https://www.forbes.com/sites/niallmccarthy/2017/03/23/tax-avoidance-costs-the-u-s-nearly-200-billion-every-year-infographic/#5e82d74e2f0d

[4] One may contend that firms do most of their sophisticated tax planning through advisors, not inhouse. However, we emphasize that identification, selection and implementation of tax strategies effectively require valuable inputs, which firms with a superior knowledge-base, capabilities, managerial skill, and understanding about business processes and systems are better able to deliver.

[5] First, Eisfeldt and Papanikolaou (2013) use 10-K filings to show that firms with high capitalized SG&A (i.e., high-OC firms) are more likely to list the departure of key talents, which embody a firm's OC, as a major risk factor. Second, the authors show that capitalized SG&A is positively correlated with the managerial quality score constructed by Bloom and Van Reenen (2007). Third, the authors use IT spending budget data from Information Week to verify that high-OC firms have greater demand for information technology. Fourth, the authors document higher levels of productivity in high-OC firms after accounting for physical capital and labor. Moreover, Li et al. (2018) show that capitalized SG&A is positively correlated with the managerial ability score developed by Demerjian et al. (2012). Further, the authors find that high-OC firms tend to rank higher in Fortune magazine's "100 Best Companies to Work for in America" list as well as in Computerworld's "100 Best Places to Work in IT" list.

firms. Studies show that firms avoid tax to increase cash flow and after-tax income. Given that tax avoidance increases the cash flow under the control of the firm (Desai and Dharmapala, 2009) and that cash flow accruing from OC is shared between shareholders and key talents (Eisfeldt and Papanikolaou, 2013), we reason that this 'cash flow sharing' will lead to shareholders valuing such tax avoidance positively. Therefore, we predict a positive relationship between tax avoidance and firm value conditional on OC. Results from our empirical analysis confirm that tax avoidance of firms with high OC increases firm value, implying that shareholders view such tax avoidance positively.

Our cross-sectional analyses further show that the positive effect of OC on tax avoidance mainly manifests in firms with better internal governance and information environment and in firms facing tighter financial constraints. Furthermore, we find that tax avoidance of high OC firms increases firms' future cash flow, suggesting that cash flow may be a channel though which tax avoidance of high OC firms increases firm value. We also document that high OC firms are more likely to invest in tax haven subsidiaries.

Our study contributes to the literature in several important ways. First, prior studies show that executive compensation and incentives and managerial ability affect firms' tax avoidance (Armstrong et al., 2012; Badertscher et al., 2013; Desai and Dharmapala, 2006; Koester et al., 2017; Rego and Wilson, 2012). We add to this literature by showing that OC facilitates and motivates firms and key talents to avoid more tax. Importantly, our result holds after controlling for firm-level characteristics, including managerial ability, intangible assets, and unobserved time invariant heterogeneity. Second, our study contributes to the emerging literature on OC. Recent studies document that OC improves firms' efficiency, performance, and innovation capacity, and that it substitutes for costly executive incentive compensation (Francis et al., 2021; Gao et al., 2021; Hasan and Cheung, 2018; Lev et al., 2009; Li et al., 2018). Despite the contribution of OC to firm-level and macro-economic productivity and efficiency, the extent to which OC affects tax avoidance of the firm is still unexplored. To the best of our knowledge, this is the first study that documents a positive relationship between OC and tax avoidance. Given the surge in corporate tax avoidance, examining the relation between OC and tax avoidance is timely and important.

Third, we contribute to the literature on investors' valuation of tax avoidance. Extant studies provide inconclusive evidence on the relation between tax avoidance and firm value. Desai and Dharmapala (2009) show that tax avoidance increases firm value only for well-governed firms. Brooks et al. (2016) find no relation between tax payment and stock returns. Blaylock (2016) shows that tax avoidance is positively associated with future performance. We provide new evidence that tax avoidance increases firm value for high OC firms.

Finally, our findings have important implications for regulators, standard setters, public companies, investors, and managerial labor markets. Despite the surge of corporate intangible investments (such as OC) documented in the literature (Eisfeldt and Papanikolaou, 2014), accounting standards do not permit recognition of such assets in the financial statements. By providing rigorous empirical evidence, we extend understanding of the extent to which OC facilitates tax avoidance, which is a precursor to informed policy making. Indeed, our study supports Lev's (2019) recommendation that, in designing the corporate reporting framework and guidelines, regulators and standard setters should consider incorporating intangible assets such as OC in the financial statements.

The rest of the paper proceeds as follows. In the next section, we review prior research and develop our hypotheses. We describe the data and methodology in Section 3, discuss the results of the empirical analyses in Section 4, and provide our conclusions in Section 5.

2. Literature review and hypotheses development

2.1. Organizational capital

OC is the "knowledge used to combine human skills and physical capital into systems for producing and delivering want-satisfying products" (Evenson and Westphal, 1995, p. 2337). Lev et al. (2009, p. 277) define OC as the "agglomeration of technologies—business practices, processes and designs" that "enables superior operating, investment and innovation performance". Examples of such business processes and systems include Wal-Mart's supply chain, where the reading of barcodes of purchased products at the checkout register is directly transmitted to suppliers, thus helping smooth the inventory management system, Dell's build-to-order system that allows customers to design their products, and Toyota's people-oriented corporate culture, knowledge-sharing systems, and streamlined and automated manufacturing systems. Corporations make significant investments in OC to enhance productivity and efficiency.[6]

Studies show that OC has become an increasingly important component of capital stock, accounting for about 30% of all intangible assets in the United States (Corrado et al., 2009; Eisfeldt and Papanikolaou, 2014). Two general views of OC prevail in the literature. One view proposes an efficiency argument that emphasizes that firm-wide shared knowledge and top-down culture strategically integrate the sub-goals of all individuals, teams, and departments to transform them to the corporate mission that generates value added outcomes (Evenson and Westpal 1995; Kaplan and Norton, 2004, among others). In this context, Lev et al. (2009) also argue that agglomeration of unique business practices, processes and structural designs, as well as culture, provides sustainable competitive

[6] For example, in its 10-K statement filed in 2018, *Amazon* states that "We seek to invest efficiently in several areas of technology and content, including AWS [Amazon Web Services], and expansion of new and existing product categories and service offerings, as well as in technology infrastructure to enhance the customer experience and improve our process efficiencies." Similarly, in its 10-K statement filed in 1999, *Coca Cola Co.* states that "Our continued success depends on recruiting, training and retaining people who can quickly identify and act on profitable business opportunities. This means maintaining and refining a corporate culture that encourages learning, innovation and value creation on a daily basis. The Coca-Cola Learning Consortium works with the management of our entire system to foster learning as a core capability. This group helps build the culture, systems and processes our people need to develop the knowledge and skills to take full advantage of new and ongoing opportunities".

advantages, which in turn improve the efficiency and productivity of the firm (Lev et al., 2009). Atkeson and Kehoe (2005) also support this view and show that returns from OC account for more than one-third of the returns from physical capital. Firm-level evidence shows that OC is associated with superior operating and stock-market performance (Lev et al., 2009), favorable transition in firms' life cycle stages (Hasan and Cheung, 2018), and value creation in merger and acquisitions (Li et al., 2018).

The other view of OC is the agency view advanced by Eisfeldt and Papanikolaou (2013). This view suggests that because OC is embodied in the firms' key talents, both shareholders and key talents have claims on the cash flow stemming from OC. Importantly, the division of cash flow between shareholders and key talents depends on the outside options of the key talents, which expose shareholders to additional risk. Therefore, shareholders require a higher risk premium to invest in firms with higher levels of OC compared to firms with higher levels of physical capital. Furthermore, using data from 20 OECD countries, Leung et al. (2018) show that the positive relation between OC and expected returns is stronger when labor market flexibility allows key talents to relocate between firms, taking tacit knowledge with them.

In this study, we intend to further our understanding of the relation between OC and corporate tax avoidance. In addition, we examine how shareholders view the tax avoidance of firms with high OC.

2.2. Tax avoidance

Tax avoidance entails all transactions and arrangements that result in reduction of a firm's tax liabilities (Dyreng et al., 2008). The traditional view of tax avoidance suggests that rational managers undertake tax avoidance activities if the marginal benefits outweigh the marginal costs (Scholes et al., 2009). This is because, tax savings stemming from tax avoidance are economically large[7] and increase the availability of cash flows that directly or indirectly benefit both shareholders and managers (Phillips, 2003). In contrast, the agency view of tax avoidance argues that opportunistic managers use tax avoidance as a tool to maximize their own interests. Consistent with this view, Desai and Dharmapala (2006) and Desai et al. (2007) find that tax avoidance facilitates managerial resource diversion.

A plethora of empirical research has investigated various determinants of corporate tax avoidance, including financial leverage (Lisowsky, 2010), intangibles (Dyreng et al., 2013; Markle and Shackelford, 2012), ownership (Badertscher et al., 2013; Chen et al., 2010; Cheng et al., 2012), and corporate governance (Armstrong et al., 2015). Studies suggest that firms whose value is disproportionately derived from intangible assets face lower taxes because the relative mobility of intangibles reportedly facilitates income shifting. For example, Dyreng et al. (2013) show that intangible assets create opportunities for within-firm income shifting that ultimately saves the firm taxes. However, prior studies use financial accounting-based information on intangibles that introduces noise or bias and, therefore, call for research using a more precise specification of intangibles (see for example, Markle and Shackelford, 2012).

An emerging body of literature examines whether and how individual managers affect corporate tax avoidance. Given that corporate decisions (including tax planning and strategies) are made by individuals, it is reasonable to expect that tax avoidance exhibits substantial managerial effects (Bertrand and Schoar, 2003). Koester et al. (2017) find that more capable managers are associated with more tax avoidance. Dyreng et al. (2010) also provide evidence that executives play a significant role in explaining a firm's tax aggressiveness. Other studies show that managerial incentive compensation, equity risk incentives, and compensation-based incentives affect tax avoidance (Desai and Dharmapala, 2006; Phillips, 2003; Rego and Wilson, 2012). Chyz (2013) shows that managers' individual personal tax attitude affects corporate tax sheltering of the firms they manage. Although this literature provides useful insights about corporate tax avoidance, it provides little insight into whether unreported stealth assets of a corporation, such as OC, affect corporate tax avoidance. Our study attempts to fill this gap and further advance our understanding of how intangible assets relate to corporate tax avoidance.

2.3. Relationship between organizational capital and tax avoidance

We hypothesize that firms with higher OC engage in more tax avoidance. Our prediction is based on the following arguments. First, firms accumulate OC through learning by doing (Ericson and Pakes, 1995), most of which can be documented and archived. Such codified, integrated, and institutionalized firm-specific, internally accumulated knowledge about business practice and process guides the firm's future actions (Hansen et al., 1999). Prior research contends that tax avoidance is an important corporate strategy (Cai and Liu, 2009) and tax systems' design, administration and compliance are knowledge-intensive activities that entail considerable costs and require substantial economic resources (Gallemore and Labro, 2015; Hasseldine et al., 2012). We argue that the efficient use of codified business practices, processes and systems assists high OC firms in tax planning to identify and exploit tax avoidance opportunities at a lower marginal cost. Thus, efficient business processes and systems of high OC firms can help such firms better allocate their corporate profits across different profit centers (e.g., via internal transfer pricing) and capitalize on the differences in tax rates, tax breaks, tax exemptions, tax deductions, and tax credits in a more efficient way, thereby leading to greater tax efficiency.

Second, one of the obvious benefits of tax avoidance is that it increases the amount of cash flows available to the firm. Tax avoidance also has the potential to generate a positive return on investment (Koester et al., 2017). Eisfeldt and Papanikolaou (2013)

[7] For example, a report in 2013 reveals that tech-giant Apple used loopholes to avoid paying billions of dollars in U.S. taxes on $44 billion in offshore income over the past four years. Source: https://www.forbes.com/sites/connieguglielmo/2013/05/20/apple-used-loopholes-to-skip-paying-44-billion-in-u-s-taxes-senate-committee-claims/#10aaf9050753

show that the cash flows and returns accruing to high OC firms are distributed among the shareholders and managers (i.e., key talents). Given these findings, we argue that managers and shareholders of high OC firms have the incentives to pursue business decisions and adopt tax strategies to reduce corporate tax payments in order to increase their share of cash flows and returns.

Based on these arguments, we propose the following hypothesis:

H1. ***Corporate tax avoidance is positively related to organizational capital.***

2.4. Organizational capital, tax avoidance, and firm value

Traditional economic theory suggests that tax avoidance is a value-enhancing activity because it transfers wealth from the state to the corporation, which may be reinvested or returned to shareholders (Scholes et al., 2009). Nonetheless, Desai and Dharmapala (2009) show a statistically insignificant relation between tax avoidance and firm value; however, they do find a significantly positive relationship for well-governed firms. Hanlon and Slemrod (2009) find that stock price declines when there is news of corporate tax aggressiveness. In addition, the authors find some evidence that the negative reaction is more pronounced for firms with weak governance.

We examine how shareholders view tax avoidance activities of firms conditional on OC. Given that tax avoidance allows firms to generate more cash flow and after-tax earnings (Scholes et al., 2009), and that both shareholders and managers have claims on the cash flows, including tax savings, accruing from OC (Eisfeldt and Papanikolaou, 2013), we further hypothesize that the effect of OC on tax avoidance is value-enhancing. We therefore propose the following hypothesis:

H2. ***: The strength of the relationship between tax avoidance and firm value is increasing in organizational capital.***

3. Research design

3.1. Data and sample

We obtain financial data from the Compustat annual file, stock market data from the CRSP database, and managerial ability data from Peter Demerjian's website.[8] Our initial sample includes all available publicly traded firms in the Compustat annual file over the period 1986–2016.[9] We exclude firms from the financial services industry (SIC 6000–6999) and firms incorporated outside the US. We then drop observations with missing information for calculating our key dependent (i.e., tax avoidance), independent (i.e., OC), and control variables. These screening criteria yield a final sample of 57,184, firm-year observations (8804 unique firms) for the GAAP effective tax rate (*GETR*) measure of tax avoidance, 52,728 firm-year observations (7889 unique firms) for the cash effective tax rate (*CETR*) measure of tax avoidance, and 55,617 firm-year observations (8566 unique firms) for the current effective tax rate (*CURRENT_ETR*) measure of tax avoidance. Table 2, Panel A summarizes the sample selection procedure.

3.2. Measures of tax avoidance

Following prior studies, in the main analysis, we use three measures of the overall level of tax avoidance (Cen et al., 2017; Dyreng et al., 2008; Huang et al., 2016). The first measure, GAAP effective tax rate (*GETR*), computed as total income tax expense divided by pre-tax book income minus special items, captures tax avoidance strategies that result in permanent tax savings (Cen et al., 2017). The second measure, cash effective tax rate (*CETR*), computed as cash income taxes paid divided by pre-tax book income minus special items, captures all tax strategies that save cash taxes paid in a year and overcomes the limitations of *GETR* (Dyreng et al., 2008). The third measure, current effective tax rate (*CURRENT_ETR*), computed as total income tax expense less deferred tax expense divided by pre-tax book income minus special items, captures tax savings resulting from both permanent and temporary book-tax differences (Cheng et al., 2012; Huang et al., 2016). Following prior literature, we restrict *GETR*, *CETR* and *CURRENT_ETR* to fall in the interval [0,1]. Moreover, for ease of interpretation, we multiply *GETR*, *CETR* and *CURRENT_ETR* by −100 and use the transformed variables in the correlation and regression analyses. Therefore, a higher *GETR*, *CETR* and *CURRENT_ETR* indicate *greater* tax avoidance.

3.3. Measures of organizational capital

We follow Peters and Taylor (2017) to estimate OC based on SG&A expenses. SG&A expenses consist of a firm's operating expenses that are not included in the direct costs of production (or cost of goods sold). In other words, SG&A includes all non-production costs. This major income statement item includes most of the expenditures that generate organization capital, such as IT outlays, employee training costs, brand enhancement activities, payment to systems and strategy consultants, and the cost of setting up and maintaining internet-based supply and distribution channels (Lev and Radhakrishnan, 2005). Following the literature (e.g., Eisfeldt and Papanikolaou, 2013; Peters and Taylor, 2017), we use the perpetual inventory method to capitalize a firm's SG&A expenses and estimate its

[8] https://peterdemerjian.weebly.com/managerialability.html

[9] Our sample period spans 1986 to 2016, which includes a change in the reporting of cash taxes paid (FAS 95 in 1988), and the reporting of income taxes (FAS 109 in 1993). To mitigate concerns with these changes, we reestimate the regressions over the period 1994–2016 (untabulated). Our inferences from this analysis are unchanged.

stock of OC.

Specifically, we calculate the stock of OC in each year as follows:

$$OC_{i,t} = (1 - \delta_{OC})OC_{i,t-1} + \left(SG\&A_{i,t} \times \lambda_{OC}\right) \quad (1)$$

We estimate the initial stock of overall OC as:

$$OC_{i,0} = \frac{\left(SG\&A_{i,t} \times \lambda_{OC}\right)}{g + \delta_{OC}} \quad (2)$$

where $OC_{i,t}$ denotes OC of firm i at time t, δ_{OC} denotes the depreciation rate of OC, $SG\&A_{i,t}$ indicates SG&A expenses of firm i in year t, λ_{OC} represents the percentage of SG&A expenditure that is invested in OC, and g denotes the average growth rate of firm-level SG&A expenses. Following prior literature (Eisfeldt and Papanikolaou, 2013; Peters and Taylor, 2017), we use a value of λ_{OC} equal to 30% of SG&A (i.e., $\lambda_{OC} = 0.30$). We also follow Peters and Taylor (2017) and include a depreciation rate of 20% ($\delta_{OC} = 0.20$).[10] In our empirical tests, we scale OC by total assets (OC/TA) and by physical capital (OC/PPE). In sensitivity analysis (Section 4.8.1), we use four additional alternative measures of OC.

3.4. Empirical model

We estimate the following regression model to test the relation between OC and tax avoidance (H1):

$$Tax\ Avoidance = \alpha_0 + \alpha_1 OC + \sum_j \alpha_j Controls + \sum_k \alpha_k Year\ Fixed\ Effects + \sum_l \alpha_l Firm\ Fixed\ Effects + \varepsilon \quad (3)$$

where, *Tax Avoidance* is one of the measures of corporate tax avoidance (see 3.2), *OC* is organizational capital (see 3.3), and *Controls* represents the firm-level controls. In all regression analyses, we cluster the standard errors at the firm level to account for the within-firm autocorrelations. All variables are defined in Table 1.

A positive coefficient, α_1, on *OC* would be consistent with H1. We include several control variables that prior studies suggest are related to corporate tax avoidance (e.g., Chen et al., 2010; Dyreng et al., 2008; Huang et al., 2016; Rego, 2003). We include firm size (*SIZE*) and growth (*MTB*) to capture fundamental firm characteristics. We include financial leverage (*LEV*) because the debt tax shield may either reduce the incentives for incremental tax planning (Graham, 2000) or motivate firms to avoid tax to save cash to pay for the debt (Graham and Tucker, 2006; Badertscher et al., 2013). We include return on assets (*ROA*) to control for profitability. Profitable firms are subject to higher marginal tax rate but also have more resources for tax planning to lower their tax rates (McGuire et al., 2012).[11] We control for foreign income (*FOR_INC*) because firms with foreign operations have more opportunities to avoid tax (Rego, 2003). We include cash holdings (*CASH*) because firms with more cash have less incentives to avoid tax. However, studies also indicate that firms that employ an aggressive tax strategy may hold more cash as a precaution for future settlements with the IRS (e.g., Hanlon et al., 2017). We include property, plant, and equipment (*PPE*) and intangible assets (*INTAN*) because tax and accounting rules relating to PPE and intangible assets may affect firm-level tax. We control for whether a firm has a net operating loss carry forward (*NOL*) at the beginning of the year and for the annual change in tax-loss carry forward (*ΔNOL*). The existence of a NOL (and a decrease in NOL) indicates that a firm can use the loss carry forward to reduce its tax liability (e.g., Chen et al., 2010; McGuire et al., 2012). We control for equity income (*EQUITY_INC*) because it reduces the firm's effective tax rate (Huang et al., 2016). We also include managerial ability (*MA_SCORE*) to control for its effect on tax avoidance (Koester et al., 2017). Lastly, we include firm and year fixed effects to control for firm-level, time-invariant heterogeneity and year fixed effects.

4. Empirical results

4.1. Descriptive statistics

Table 2, Panel B presents descriptive statistics of the variables used in the regression analyses. The mean (median) *GETR*, *CETR* and *CURRENT_ETR* are 30.94% (34.41%), 24.77% (24.19%) and 27.66% (29.35%), respectively. These statistics are consistent with prior studies (Cen et al., 2017; Hasan et al., 2017; Huang et al., 2016). The mean (median) *OC/TA* is 0.33 (0.24) and the standard deviation is 0.44. The mean statistics also show that our sample firms are moderately large (*SIZE* = $1.98 billion) and leveraged (*LEV* = 0.21) and have high growth opportunities (*MTB* = 2.04), profitability (*ROA* = 0.18) and liquidity (*CASH* = 0.20). Moreover, firms have an average of 32.1% of total assets in physical assets and 16% in intangible assets. Other firm-characteristics are also in the range of those reported in prior studies.

[10] Peters and Taylor (2017) show that use of different percentages of SG&A expenditure (δ_{OC}) and depreciation rates (λ_{OC}) do not alter their findings.

[11] We also test the robustness of our findings after excluding loss firms (defined as firms with negative ROA). Untabulated findings are very similar to those reported in the main analysis. In addition, findings from our analysis are qualitatively similar irrespective of whether we define *ROA* as operating income before depreciation scaled by lagged total assets, pre-tax income scaled by lagged total assets, or net income scaled by lagged total assets.

Table 1
Variable definitions.

Variable	Definition and measurement
Dependent variables	
GETR	GAAP effective tax rate, measured as total income tax expense (TXT) divided by pre-tax book income minus special items (PI – SPI). We truncate the values at 0 and 1. For ease of interpretation, we multiply GETR by −100 and use the transformed variable in the correlation and regression analyses. Therefore, a higher GETR indicates a greater degree of tax avoidance.
CETR	Cash effective tax rate, measured as cash income taxes paid (TXPD) divided by pre-tax book income minus special items (PI – SPI). We truncate the values at 0 and 1. For the ease of interpretation, we multiply CETR by −100 and use the transformed variable in the correlation and regression analyses. Therefore, a higher CETR indicates a greater degree of tax avoidance.
CURRENT ETR	Current effective tax rate, measured as total income tax expense less deferred tax expense (TXT–TXDI) divided by pre-tax book income minus special items (PI –SPI). We truncate the values at 0 and 1. For the ease of interpretation, we multiply CURRENT_ETR by −100 and use the transformed variable in the correlation and regression analyses. Therefore, a higher CURRENT_ETR indicates a greater degree of tax avoidance.
TAX HAVEN_D	An indicator variable that equals one if a firm has at least one subsidiary in a tax haven as defined by Dyreng and Lindsey (2009), zero otherwise.
TAX HAVEN_LN	Natural log of total number of subsidiaries in a tax haven as defined by Dyreng and Lindsey (2009).
Tobin's Q	Tobin's Q ratio, measured as the sum of book value of assets (AT) and market value of equity (PRCC_F*CSHO) less common equity (CEQ) divided by book value of assets (AT).
Independent variables and control variables	
OC/TA	OC measure of Peters and Taylor (2017) divided by total assets. See Eqs. (1) and (2) for details.
SIZE	The natural log of market value of equity (PRCC_F*CSHO).
LEV	Leverage, measured as the ratio of long-term debt (DLTT) to lagged total assets (AT).
MTB	Market-to-book ratio, calculated as the market value of assets ((PRCC_F*CSHO) + (DLTT+DLC)) divided by the lagged book value of assets (AT).
ROA	Return on assets, measured as operating income before depreciation (OIBDP) divided by lagged total assets (AT)
FOR_INC	An indicator variable that equals one if income of a company's foreign operations before taxes (PIFO) is positive, zero otherwise.
CASH	Cash and marketable securities (CHE) divided by lagged total assets (AT).
PPE	Net property, plant, and equipment (PPENT) divided by lagged total assets (AT).
INTAN	Intangible assets (INTAN) divided by lagged total assets (AT).
NOL	An indicator variable that equals one if the tax loss carry forward (TLCF) is positive, zero otherwise.
ΔNOL	Change in tax loss carry forward (TLCF) divided by lagged total assets (AT).
EQUITY_INC	Equity income in earnings (ESUB) divided by lagged total assets (AT).
MA_SCORE	Managerial ability measure following Demerjian et al. (2012).
Variables used in the cross-sectional analyses	
ICW	An indicator variable that equals one if the firm reports a Section 404 material weakness in the current fiscal year, zero otherwise.
TENURE	Natural logarithm of CEO tenure in number of years.
CO-OPTED	Co-opted director ratio (Coles et al., 2014) that represents co-opted directors as a fraction of the total board.
CEO_OWN	Percentage of outstanding shares of a firm owned by the CEO.
INST_OWN	Proportion of shares held by institutional investors.
INST_CON	Institutional ownership concentration based on the Herfindahl–Hirschman Index of institutional ownership.
HOSTILE	Firm-specific hostile takeover susceptibility index developed by Cain et al. (2017).
E-INDEX	Antitakeover defense based on the E-index of Bebchuk et al. (2009).
WW	Financial constraints measure of Whited and Wu (2006).
DIV_PAYER	An indicator variable that equals 1 if the firm pays cash dividends (DVC > 0), 0 otherwise.
Cashflow	Cash flow of the firm, measured as income before extraordinary items (IB) minus common dividends (DVC) divided by lagged total assets (AT).
Variables used in the sensitivity analyses	
CETR_LONG	Long-run CASH ETR (CETR_LONG), measured as the sum of cash taxes paid (TXPD) over five years divided by the sum of pre-tax income less special items (PI – SPI) over the five-year period.
CASH_RATIO	Cash ratio, measured as income taxes paid (TXPD) divided by the sum of net operating cash flow (OANCF) and income taxes paid (TXPD) minus extraordinary items and discontinued operations (XIDOC).
SHELTER	Probability of tax sheltering, measured using Wilson (2009). We consider a firm to engage in tax sheltering activities when the predicted shelter probabilities are in the top quintile of the distribution.
UTB_TOTAL	Year-end unrecognized tax benefits (TXTUBEND) divided by lagged total assets (AT).
UTB_ETR	Total amount of unrecognized tax benefits that, if recognized, would affect the effective tax rate (TXTUBTXTR) divided by lagged total assets (AT).
OC/PPE	OC measure of Peters and Taylor (2017) divided by property, plant and equipment (PPEGT). See Eqs. (1) and (2) for details.
OC/TA_EP	OC measure of Eisfeldt and Papanikolaou (2013) divided by total assets. See Eq. (3) for details.
OC/PPE_EP	OC measure of Eisfeldt and Papanikolaou (2013) divided by property, plant and equipment (PPEGT). See Eq. (3) for details.
SG&A	Selling, general, and administrative expenses (SG&A) divided by lagged total assets (AT).
R&D	Research and development expenses, measured as R&D (XRD), divided by lagged total assets (AT). We replace missing XRD with zero.
ADV	Advertising expenses (XAD) divided by lagged total assets (AT). We replace missing XAD with zero.

Table 2, Panel C reports the sample composition and the average value of *OC/TA* for the Fama-French (Fig. 1 and Fig. 2) ten industry groups. Business equipment (i.e., computers, software, and electronic equipment) comprises the largest share of our sample (20.15%) and telephone and television transmission the smallest (2.53%). We also find that firms in the industries of wholesale, retail, and some services and consumer nondurables have the highest average OC, while firms in oil, gas, and coal extraction and products have the lowest OC.

In Fig. 1, we plot the average *OC/TA* of our sample firms over the same period. We find that the average value of *OC/TA* fluctuates around 0.30 to 0.40 (i.e., 30% to 40% of total assets) over the sample period, with the peak being 0.40 in 2002 (about when the dotcom

Table 2
Sample selection, summary statistics, and sample distribution.

Panel A: Sample selection procedure

Filtering	Observations
Firm-year observations from 1986 to 2016 in Compustat Annual file after excluding duplicates	344,798
Less: Observations pertaining to SIC #6000–6999	91,116
Less: Firms incorporated outside USA	55,963
Less: Missing firm-year observations for tax avoidance (GETR)	99,129
Less: Missing OC and control variable data	41,406
Final Sample for the GETR measure of tax avoidance analysis	**57,184**

Panel B: Summary statistics

Variable	Mean	Std. Dev.	p25	Median	p75
GETR (%)	30.938	0.149	23.986	34.409	38.975
CETR (%)	24.773	0.184	9.357	24.188	35.668
CURRENT ETR (%)	27.655	0.175	14.305	29.346	38.405
OC/TA	0.333	0.435	0.109	0.236	0.430
SIZE (billion USD)	1.982	5.983	0.044	0.228	1.081
LEV	0.209	0.266	0.005	0.138	0.310
MTB	2.037	2.577	1.127	1.496	2.204
ROA	0.182	0.134	0.109	0.160	0.229
FOR_INC	0.312	0.463	0.000	0.000	1.000
CASH	0.196	0.308	0.027	0.094	0.258
PPE	0.321	0.287	0.112	0.238	0.441
INTAN	0.160	0.242	0.000	0.059	0.228
NOL	0.349	0.477	0.000	0.000	1.000
ΔNOL	0.001	0.288	0.000	0.000	0.000
EQUITY_INC	0.001	0.005	0.000	0.000	0.000
MA_SCORE	0.011	0.114	−0.056	−0.006	0.051
ICW	0.069	0.254	0.000	0.000	0.000
TENURE	1.801	0.872	1.099	1.792	2.398
CO-OPTED	0.478	0.319	0.200	0.444	0.750
CEO_OWN	0.036	0.071	0.002	0.008	0.029
INST_OWN	0.483	0.315	0.197	0.481	0.758
INST_CON	0.184	0.229	0.047	0.084	0.212
HOSTILE	0.142	0.096	0.071	0.118	0.189
E-INDEX	2.758	1.521	2.000	2.000	4.000
WW	−0.172	0.307	−0.465	−0.228	−0.144
DIV_PAYER	0.373	0.484	0.000	0.000	1.000
Cashflow	0.054	0.065	0.019	0.046	0.081
CETR_LONG (%)	26.620	14.807	16.918	27.231	35.083
CASH RATIO (%)	19.446	17.175	5.600	16.657	27.916
UTB_ETR	0.008	0.012	0.001	0.004	0.010
UTB_TOTAL	0.011	0.018	0.001	0.005	0.013
SHELTER	0.343	0.475	0.000	0.000	1.000
TAX HAVEN_LN	0.399	0.648	0.000	0.000	0.693
TAX HAVEN_D	0.325	0.468	0.000	0.000	1.000
OC/PPE	1.331	2.904	0.216	0.646	1.430
OC/TA_EP	1.767	2.717	0.637	1.242	2.135
OC/PPE_EP	6.992	16.529	1.343	3.389	7.254
SG&A	0.369	0.423	0.149	0.286	0.480
R&D	0.034	0.078	0.000	0.000	0.035
ADV	0.016	0.042	0.000	0.000	0.011
ΔSALE	0.214	0.632	0.015	0.104	0.245
Tobin's Q	1.935	2.263	1.118	1.471	2.138

Panel C: Sample industry distribution and average *OC/TA* by industry

Industry	Sample	% N	Mean OC/TA
Consumer nondurables	4754	8.31	0.417
Consumer durables	1856	3.25	0.289
Manufacturing	8902	15.57	0.278
Oil, gas and coal extraction and products	2899	5.07	0.099
Chemicals and allied products	2068	3.62	0.370
Business equipment	11,525	20.15	0.346
Telephone and television transmission	1446	2.53	0.186
Wholesale, retail, and some services	8958	15.67	0.488
Healthcare, medical equipment and drugs	5162	9.03	0.331
Other	9614	16.81	0.264

Panel A of this table presents sample selection procedure, Panel B presents summary statistics of the variables used in this study, and Panel C presents the sample distribution by Fama-French ten industry classification and the average value of *OC/TA* by industry. The sample period is from 1986 to 2016. All continuous variables are winsorized at the 1% and 99% levels. Detailed definitions of all variables are provided in Table 1.

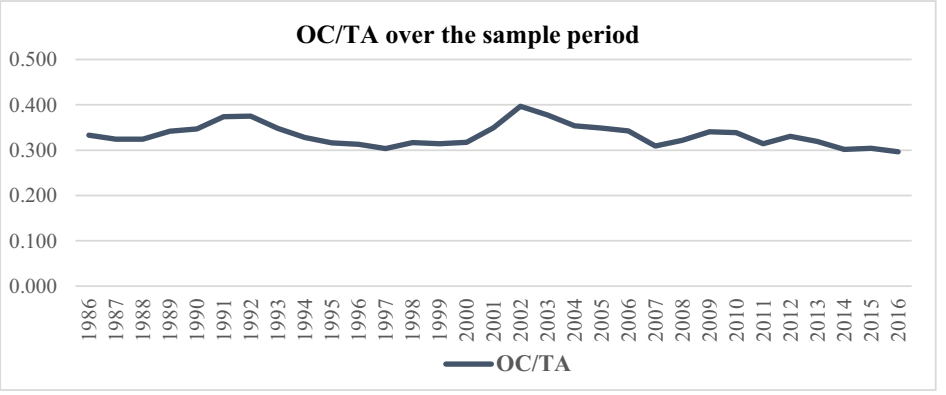

Fig. 1. Organizational capital (OC/TA) over the sample period.

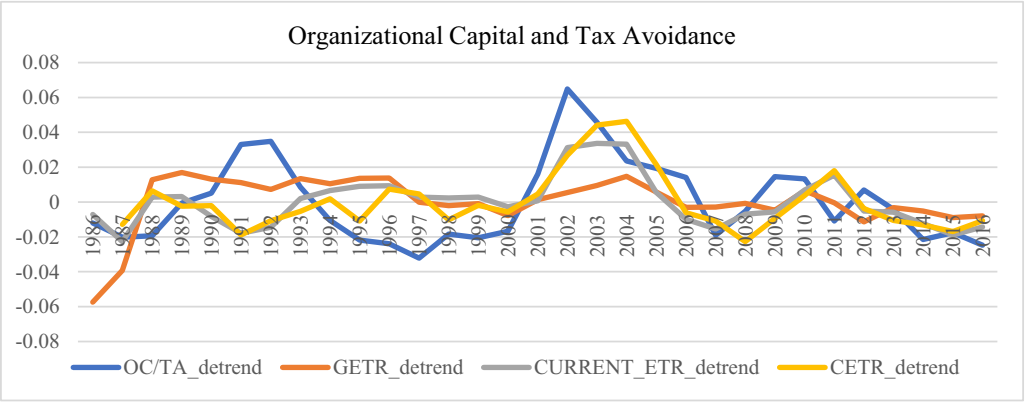

Fig. 2. Detrended organizational capital and tax avoidance over the sample period.

bubble burst). Fig. 2 depicts the average detrended *OC/TA* and detrended tax avoidance measures over the sample period (we detrend these time series by regressing the average *OC/TA* and tax avoidance time series on the number of years since 1986 and obtain the regression residuals). We multiply the detrended GAAP effective tax rate, cash effective tax rate, and current effective tax rate by −1 so that greater values indicate *higher* levels of tax avoidance. As can be seen from Fig. 2, there is a clear positive correlation between OC and tax avoidance in the data.

4.2. *Correlations and univariate analysis*

Table 3, Panel A reports Pearson pairwise correlations between the variables used in the main regression analysis. We find that OC (*OC/TA*) is positively correlated ($p < 0.01$) to both *GETR* and *CURRENT_ETR*. These positive correlations indicate that firms with high OC have higher levels of tax avoidance. The correlations also show that the tax avoidance measures are strongly positively correlated with each other (coefficients range from 0.40 to 0.63; $p < 0.01$). In addition, we find that firm size and profitability are negatively correlated ($p < 0.01$) with tax avoidance, while growth, leverage, liquidity, tax loss carry forward and equity income are positively correlated ($p < 0.01$) with tax avoidance. Overall, the correlations of firm-level controls with the tax avoidance measures are in line with expectations.[12]

We also carry out mean and median tests of the difference in effective tax rates between high and low OC sub-sample. Specifically,

[12] To mitigate the concern with the high correlation between *MTB* and *ROA* (correlation = −0.78), we include *MTB* and *ROA* separately in the regression and find that our results hold. We further note that multicollinearity is not a concern as the highest variance inflation factor (VIF) is 1.52 for *PPE*, and the rest of the VIFs are below 1.45.

Table 3
Correlations and univariate analysis.

Panel A: Correlation matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
(1) GETR	1.00															
(2) CETR	0.40*	1.00														
(3) CURRENT_ETR	0.59*	0.63*	1.00													
(4) OC/TA	0.08*	0.00	0.02*	1.00												
(5) SIZE	-0.05*	-0.04*	-0.05*	-0.30*	1.00											
(6) LEV	-0.00	0.06*	0.10*	-0.00	0.07*	1.00										
(7) MTB	0.08*	0.07*	0.02*	0.50*	-0.14*	0.10*	1.00									
(8) ROA	-0.06*	0.00	-0.06*	-0.47*	0.22*	-0.09*	-0.78*	1.00								
(9) FOR_INC	0.00	-0.04*	-0.07*	-0.09*	0.41*	-0.03*	-0.09*	0.13*	1.00							
(10) CASH	0.09*	0.08*	0.01‡	-0.01*	-0.00	0.01*	0.35*	-0.41*	-0.08*	1.00						
(11) PPE	-0.02*	0.07*	0.13*	-0.17*	0.14*	0.35*	-0.00	-0.04*	-0.10*	0.04*	1.00					
(12) INTAN	-0.01†	0.01‡	-0.01	-0.08*	0.17*	0.27*	0.04*	-0.04*	0.10*	0.05*	-0.04*	1.00				
(13) NOL	0.14*	0.16*	0.16*	0.09*	-0.09*	0.00	0.08*	-0.12*	0.05*	0.07*	-0.13*	0.07*	1.00			
(14) ΔNOL	0.02*	-0.00	0.01*	0.25*	-0.12*	0.07*	0.41*	-0.51*	-0.08*	0.25*	0.01‡	0.03*	0.25*	1.00		
(15) EQUITY_INC	0.02*	0.02*	0.03*	-0.03*	0.11*	0.01*	-0.03*	0.04*	0.09*	-0.04*	0.04*	0.00	-0.05*	-0.03*	1.00	
(16) MA_SCORE	0.03*	0.01*	-0.04*	0.13*	0.10*	-0.10*	0.09*	0.08*	0.06*	0.09*	-0.18*	-0.03*	-0.04*	-0.02*	0.01*	1.00

Panel B: Univariate analysis

	Mean difference test				Median difference test			
	High OC **Q3**	Low OC **Q1**	Diff.	t-value	High OC **Q3**	Low OC **Q1**	Diff.	z-value
GETR	0.295	0.313	-0.018	11.472***	0.338	0.346	-0.008	7.543***
CETR	0.244	0.245	-0.001	0.179	0.235	0.239	-0.004	2.686***
CURRENT_ETR	0.269	0.276	-0.007	3.762***	0.289	0.291	-0.002	3.779***

Panel A of this Table reports Pearson correlations between the key variables. We multiply the tax avoidance measures by -1, so that greater values indicate higher levels of tax avoidance. *, ‡, and † denote statistical significance at the 1%, 5%, and 10% levels, respectively. In Panel B, we report mean and median tests of difference in tax avoidance between high (Q3) and low (Q1) OC/TA terciles. Here, we do not multiply the tax avoidance measures by -1, so that greater values indicate lower levels of tax avoidance. *** denotes significance at the 1% level. All variables are defined in Table 1.

This panel reports mean and median tests of difference in tax avoidance between high (Q3) and low (Q1) OC/TA terciles. Here, we do not multiply the tax avoidance measures by −1, so that greater values indicate lower levels of tax avoidance. *** denotes significance at the 1% level. Variables are defined in the Variable Definition table.

we divide the sample firms into OC terciles each year for each 3-digit SIC industry and compare the mean and median effective tax rates for the high (Q3) versus low (Q1) OC terciles. As shown in Table 3, Panel B, the high OC firms have significantly lower effective tax rates than their low OC counterparts, which also lends preliminary support for our hypothesis (H1).

4.3. Organizational capital and tax avoidance: Baseline regression results (test of H1)

Table 4 presents firm fixed effect regression results of the relationship between tax avoidance and OC. Our main independent variable is *OC* (*OC/TA*). We use three measures of tax avoidance (*GETR*, *CETR* and *CURRENT ETR*) as the dependent variable, and report the results in Columns (1)–(3) of Table 4. Recall that higher values of *GETR*, *CETR* and *CURRENT_ETR* indicate higher tax avoidance. Consistent with H1, the coefficients of *OC* (*OC/TA*) are significantly positive for all three measures of tax avoidance. For example, in Column (1), the coefficient on *OC/TA* is 3.56 ($p < 0.01$). In terms of economic significance, this coefficient indicates that a one standard deviation increase in *OC/TA* (= 0.44) is associated with an increase in *GETR* of 5.0% relative to its mean. Given the mean pre-tax income of $160.11 million for our sample, the increase in *GETR* amounts to a tax saving of $8.01 million.

The results in Columns (2) and (3) also provide evidence that OC is positively associated with tax avoidance, as reflected by the positive and significant coefficients of *OC/TA* for both *CETR* (coefficient = 3.17; $p < 0.01$) and *CURRENT_ETR* (coefficient = 2.92; $p < 0.01$). These statistically and economically significant results (representing 5.56% and 4.59% of tax avoidance relative to the mean *CETR* and *CURRENT_ETR*, respectively) suggest that firms with higher OC avoid significantly more taxes than firms with lower OC. In dollar terms, the coefficients imply a tax saving of $9.37 million and $7.41 million for *CETR* and *CURRENT_ETR*, respectively.[13]

In terms of control variables, we find that larger firms and firms with higher managerial ability avoid less tax.[14] On the other hand, firms with more leverage, foreign income, cash holdings, loss carry forward, and equity income avoid more tax. These results are consistent with prior findings (Cheng et al., 2012; Dyreng et al., 2010; Hasan et al., 2017). Overall, the results in Table 4 provide strong support for H1 that firms with higher OC avoid more corporate tax.

Recall that, we conceptualize OC as the stock of knowledge, human capital, branding, business processes and systems that enhances organizational efficiencies. To better understand what part of OC is related to greater tax avoidance, we decompose OC into three components: OC due to brand capital investment (*BC/TA*), OC due to human capital investment (*HC/TA*), and the residual component of OC that captures the investment in firm-specific business processes and systems (*RES_OC/TA*). We capitalize staff expense (Compustat item: xlr) into the human capital component of OC (*HC/TA*), and advertising expense (Compustat item: xad) into the brand capital component of OC (*BC/TA*), following the same procedure as in Eqs. (1) and (2). We compute the OC component due to firm-specific business processes and systems, *RES_OC/TA*, as the difference between *OC/TA* and the sum of the brand capital component (*BC/TA*) and the human capital component (*HC/TA*).[15] We then separately regress the tax avoidance variables on each component and report the results in Appendix Table A1.

We find that neither the brand capital component of OC nor the human capital component of OC is related to greater tax avoidance. The results show that it is the residual component of OC related to the firm's unique business processes and systems that leads to greater tax avoidance. This finding suggests that more efficient business processes and systems can help the firm in tax planning to better identify and exploit tax avoidance opportunities, and better allocate its corporate profits across different profit centers (e.g., via internal transfer pricing) to capitalize on the differences in tax rates, tax breaks, tax exemptions, tax deductions and tax credits, thereby leading to greater tax efficiency.

4.4. Controlling for endogeneity

A concern with the results reported earlier is that the models may omit some firm-characteristics that are correlated with OC, and therefore our results may be driven by those correlated omitted variables and not by OC. Furthermore, tax avoiding firms may have more resources to invest in OC, which could result in a reverse causality problem. In this section, we attempt to alleviate these concerns.

[13] Note that mean pre-tax income is $168.51 million for the *CETR* sample and $161.39 million for the *CURRENT_ETR* sample. We argue that tax savings stemming from OC should be interpreted along with other benefits documented in prior literature. For example, Lev and Radhakrishnan (2005) and Lev et al. (2009) find that greater OC leads to higher operating performance and firm value. Li et al. (2018) find that acquirers with superior OC achieve better deal performance and more synergy gains in M&A transactions. Atkeson and Kehoe (2005) estimate that the cash flows from OC are more than 30% of the size of the cash flows from physical capital.

[14] The negative relation between *MA_SCORE* and tax avoidance is consistent with the finding in Francis et al. (2018), who document that firms with higher managerial ability are associated with lower tax aggressiveness after controlling for firm characteristics and industry and year effects. Moreover, Park et al. (2016) also document a statistically significant negative relation between managerial ability and tax avoidance. To check whether the negative relation between *MA_SCORE* and tax avoidance is due to the inclusion of OC, we remove *OC/TA* from our baseline regressions. We continue to find that *MA_SCORE* is negatively related to tax avoidance (untabulated).

[15] Staff expense is included in operating expense (Compustat: xopr), which is sum of selling, general and administrative (SG&A) expenses and cost of goods sold (COGS). For manufacturing firms, staff expense is more likely a part of COGS than a part of SG&A. Therefore, we do not deduct capitalized staff expense from OC when calculating the residual component for manufacturing firms (defined according to Fama-French 12 industry classification).

Table 4
Relation between tax avoidance and organizational capital: Firm fixed effects regression results.

	(1)	(2)	(3)
Dep. Var. =	GETR	CETR	CURRENT_ETR
OC/TA	**3.559*** **	**3.168*** **	**2.919*** **
	[0.43]	**[0.53]**	**[0.50]**
SIZE	−1.045***	−0.624***	−1.257***
	[0.13]	[0.17]	[0.15]
LEV	1.257**	−0.035	1.684***
	[0.49]	[0.59]	[0.54]
MTB	−0.021	−0.013	−0.031
	[0.05]	[0.08]	[0.05]
ROA	−3.237***	8.702**	−1.556
	[0.69]	[3.68]	[1.10]
FOR_INC	0.725***	1.681***	0.781**
	[0.27]	[0.35]	[0.33]
CASH	1.716***	4.100***	0.944**
	[0.36]	[0.60]	[0.43]
PPE	−0.368	1.068	1.823**
	[0.62]	[0.97]	[0.73]
INTAN	0.429	−0.173	−1.018*
	[0.57]	[0.70]	[0.61]
NOL	2.494***	4.810***	3.856***
	[0.25]	[0.31]	[0.29]
ΔNOL	−0.257	−2.013***	−0.939***
	[0.33]	[0.38]	[0.27]
EQUITY_INC	71.874***	180.005***	141.760***
	[21.91]	[28.34]	[25.18]
MA_SCORE	−1.429*	−4.710***	−1.471
	[0.87]	[1.32]	[1.05]
Year effects	Yes	Yes	Yes
Firm effects	Yes	Yes	Yes
Observations	57,184	52,728	55,617
Adj. R^2	0.40	0.33	0.40
Number of unique firms	8804	7889	8566

This table reports firm fixed effect regression results of the relation between corporate tax avoidance and OC. The dependent variables in columns (1), (2) and (3) are *GETR*, *CETR*, and *CURRENT_ETR*, respectively. Standard errors are reported in parentheses. All variables are defined in Table 1. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level (two-tailed), respectively.

4.4.1. *Two-stage least-squares regression*

Our regressions control for a set of firm characteristics that prior studies document as affecting tax avoidance. In addition, the use of firm-fixed effects regression confirms that our results are not driven by omitted unobserved firm-level heterogeneity. In this section, we use instrumental variables estimation to further alleviate the endogeneity concerns of omitted variables and reverse causality. Following prior studies (e.g., Carlin et al., 2012; Hasan and Cheung, 2018; Li et al., 2018), we use state-level UI benefits and 3-digit SIC industry median OC (excluding the focal firm) as instruments in two-stage least-squares (2SLS) instrumental-variable regressions. More generous UI benefits reduce employee job switches so that firms located in states with greater UI benefits have stronger incentives to invest more in OC (Brown and Kaufold, 1988; Levhari and Weiss, 1974; Li et al., 2018). Moreover, greater OC of industry peer firms should also incentivize the focal firm to invest more in developing its own OC (Carlin et al., 2012; Hasan and Cheung, 2018). Moreover, state-level UI benefits and industry peer OC should have no direct effect on the focal firm's level of tax avoidance (other than through the focal firm's OC).

We collect the data from the U.S. Department of Labor's Database on Significant Provisions of State UI Laws. We use the natural logarithm of the product of the maximum benefit amount and the maximum duration allowed as the measure of UI benefits generosity (UI) (Hassler et al., 2005). We merge the state-year UI measure with our firm-year panel based on the firm's *historical* headquarters' state.[16]

We report the results of the instrumental variables estimation in Table 5. Column (1) presents the first-stage regression results where we regress *OC/TA* on the two instrumental variables and the same set of firm characteristics and fixed effects as the second-stage regression to obtain the fitted value of organization capital.[17] The *p*-value of Cragg-Donald's Wald *F* weak-instrument test statistic is

[16] We obtain the information on historical headquarter state for each firm year from Matthew Serfling's research website (https://sites.google.com/utk.edu/matthew-serfling/research) for the sample period before 2003. For the period after 2003, we obtain the information on historical headquarter state for each firm year from the latest SEC 10 K/Q filing using the Augmented 10-X Header Data provided by the Notre Dame Software Repository for Accounting and Finance (https://sraf.nd.edu/data/augmented-10-x-header-data/).

[17] The first-stage results are very similar across different regressions. Thus, we only report the one with the highest number of observations for brevity.

Table 5
Relation between tax avoidance and organizational capital: Two-stage instrumental-variable estimation.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Instrumental variable regression				Lewbel (2012) approach		
Variables	OC/TA	GETR	CETR	CURRENT_ETR	GETR	CETR	CURRENT_ETR
OC/TA		**11.136****	**20.227****	**22.420*****	**2.505*****	**2.890*****	**1.918*****
		[5.67]	**[8.62]**	**[8.38]**	**[0.61]**	**[1.12]**	**[0.72]**
UI	**0.036****						
	[0.018]						
PEER_OC	**0.187*****						
	[0.029]						
SIZE	-0.110***	−0.047	0.946	0.698	−1.161***	−0.651***	−1.361***
	[0.010]	[0.64]	[0.86]	[0.86]	[0.14]	[0.21]	[0.16]
LEV	−0.009	1.284**	0.366	1.523**	1.254**	−0.036	1.687***
	[0.027]	[0.57]	[0.77]	[0.75]	[0.49]	[0.59]	[0.54]
MTB	0.033**	−0.272	−0.360*	−0.575*	0.016	−0.007	0.001
	[0.014]	[0.23]	[0.20]	[0.32]	[0.04]	[0.07]	[0.05]
ROA	0.044	−4.427***	12.082***	−1.302	−3.194***	8.720**	−1.518
	[0.092]	[1.28]	[1.77]	[2.41]	[0.68]	[3.70]	[1.09]
FOR_INC	0.008	0.542**	1.520***	0.583*	0.732***	1.682***	0.790**
	[0.006]	[0.28]	[0.37]	[0.35]	[0.27]	[0.35]	[0.33]
CASH	-0.108***	2.569***	5.625***	3.042***	1.592***	4.073***	0.830*
	[0.021]	[0.74]	[1.03]	[1.05]	[0.36]	[0.62]	[0.43]
PPE	-0.094***	0.580	1.320	3.658***	−0.472	1.048	1.729**
	[0.033]	[0.88]	[1.08]	[1.18]	[0.62]	[0.99]	[0.74]
INTAN	-0.206***	2.153	3.107	3.245*	0.201	−0.231	−1.230**
	[0.019]	[1.31]	[1.89]	[1.86]	[0.58]	[0.76]	[0.63]
NOL	0.018***	2.354***	4.429***	3.545***	2.514***	4.815***	3.873***
	[0.007]	[0.27]	[0.37]	[0.34]	[0.25]	[0.31]	[0.29]
ΔNOL	0.057**	−0.764	−2.707***	−2.049**	−0.206	−2.004***	−0.898***
	[0.029]	[0.58]	[0.61]	[0.80]	[0.32]	[0.38]	[0.27]
EQUITY_INC	−0.084	86.251***	203.309***	157.990***	71.964***	179.950***	141.848***
	[0.310]	[23.04]	[31.39]	[27.93]	[21.88]	[28.32]	[25.17]
MA_SCORE	0.200	−3.492**	−8.760***	−5.721***	−1.209	−4.664***	−1.283
	[0.033]	[1.47]	[1.85]	[1.93]	[0.87]	[1.30]	[1.06]
Observations	51,450	51,450	47,998	50,264	51,450	47,998	50,264
Year effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Weak instrument test:							
Cragg-Donald Wald F statistic	84.853				523.743	382.967	588.270
Stock-Yogo (2005) crit. Val.	19.93				107.66	107.66	107.66
Overidentification test:							
Hansen J statistic (*p*-value)		0.972	0.664	0.837	0.120	0.082	0.354

This table reports two-stage least-squares regression results of the relation between corporate tax avoidance and OC. Columns (1) to (4) present regression results using state-level UI benefits and 3-digit SIC industry median OC (excluding the focal firm) as instruments. Columns (5) to (7) present regression results using the Lewbel (2012) approach that exploits the heterogeneity in the error term of the first stage regression to generate instruments from within the existing model. Standard errors are reported in parentheses. All variables are defined in Table 1. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level (two-tailed), respectively.

0.000, indicating rejection of the null hypothesis that the instruments are weak (Cragg and Donald, 1993; Stock and Yogo, 2005). Consistent with our conjecture, both UI benefits and industry peer OC are positively and significantly associated with the focal firm's OC. Columns (2)–(4) present the second-stage regression results where we regress the tax avoidance measures on the fitted value for OC, and the same set of control variables as used in the first stage. The *p*-values of Hansen's *J* over-identification test statistic are large across all three regressions, indicating valid instruments that are uncorrelated with the error term (Hansen, 1982). Importantly, we find that the instrumented OC is positively and significantly associated with all three tax avoidance measures ($p < 0.05$ or better).[18]

To further mitigate endogeneity concerns, we employ the instrumental variable method developed by Lewbel (2012). This method does not rely on any external instrument, but instead exploits the heterogeneity in the error term of the first stage regression to generate instruments from within the existing model. It has been applied in recent corporate finance research (e.g., Colonnello et al., 2017; Mavis et al., 2020; Chen et al., 2021). Columns (5) to (7) of Table 5 report the results. We find that the instrumented OC using Lewbel's (2012) estimation method continues to be positively and significantly related to all three measures of tax avoidance ($p <$ 0.01).

[18] The coefficient of OC in 2SLS regressions is much larger than those in the baseline regressions, which is consistent with Li et al. (2018). This is not surprising since the two-stage estimator is biased and inefficient but consistent.

4.4.2. Entropy balancing method

Following recent studies (e.g., Arifin et al., 2020; Ashraf et al., 2020), we also use the entropy balancing method to address the endogeneity concern. Specifically, we split firm-year observations into treatment (high OC) and control (low OC) groups based on the median *OC/TA* in each year. The entropy balancing method then re-weights each observation of the control group so that the mean, variance, and skewness of all covariates are balanced across the treatment and control groups. This technique thus adjusts for random and systematic inequalities in the variable distributions between the treatment and control groups to mitigate the risk that design choices could affect our results (Hainmueller, 2012). We then re-estimate the regressions using the entropy balanced sample and report the results in Appendix Table A2. We continue to find that OC is positively and significantly related to tax avoidance in the entropy balanced sample (p-value<0.01).

4.5. Organizational capital, tax avoidance, and firm value (test of H2)

In this sub-section, we examine how shareholders value tax avoidance by high OC firms. Hypothesis H2 posits that because tax avoidance allows firms to generate more cash flow and after-tax earnings (Scholes et al., 2009) and that both shareholders and managers have claims on the cash flows, including tax savings, accruing from OC (Eisfeldt and Papanikolaou, 2013), the effect of OC on tax avoidance will be value-enhancing.

We test this hypothesis by regressing firm value (proxied by Tobin's Q) on OC, tax avoidance, and their interaction, as well as standard controls using the following model[19]:

$$\begin{aligned} Tobin's\ Q = {} & \alpha_0 + \alpha_1 OC + \alpha_2 Tax\ Avoidance + \alpha_3 OC{*}Tax\ Avoidance + \alpha_4 SIZE + \alpha_5 LEV + \alpha_6 ROA + \alpha_7 R\&D + \alpha_8 CAPEX + \alpha_9 PPE \\ & + \sum_k \alpha_k Year\ Fixed\ Effects + \sum_l \alpha_l Firm\ Fixed\ Effects + \varepsilon \end{aligned} \tag{4}$$

A positive coefficient of the interaction term, α_3, would imply that investors view tax avoidance by high OC firms as a value increasing activity. Table 6 reports the results. In Columns (1) to (3), we use the OC measure of Peters and Taylor (2017). We find that the coefficient of *OC* is positive and significant ($p < 0.01$). Importantly, the coefficient of the interaction term is positive and significant (at $p < 0.10$ or better) in all regressions. In particular, the coefficient of the interaction variable is 0.03 ($p < 0.05$), 0.01 ($p < 0.05$), and 0.02 ($p < 0.10$) when *OC/TA* is interacted with *GETR*, *CETR*, and *CURRENT_ETR*, respectively. These results support hypothesis H2, that tax avoidance of high OC firms is positively valued by investors. We obtain qualitatively similar results (significant at $p < 0.01$) when we use the OC measure of Eisfeldt and Papanikolaou (2013) (Columns (4) to (6)).

4.6. Cross-sectional analysis

4.6.1. Internal governance and the relation between tax avoidance and organizational capital

While developing our hypothesis, we argue that codified, integrated, institutionalized, internally accumulated, firm-specific knowledge, and efficient internal business process and coordination assist high OC firms to identify and exploit tax avoidance opportunities at a lower marginal cost, leading to greater tax efficiency. This argument suggests that the positive relationship between OC and tax avoidance may be stronger for firms with superior internal governance and information environment. To test this conjecture, we follow Gallemore and Labro (2015) and use the absence of Sarbanes-Oxley (SOX) Section 404 material weaknesses in internal controls (ICW) as a proxy for a good internal information environment. Moreover, we use CEO tenure, co-opted director ratio (Coles et al., 2014), and CEO share ownership as proxies for the strength of internal governance. Firms that are identified by auditors as having Sarbanes-Oxley (SOX) Section 404 material weaknesses in internal controls, firms that have long CEO tenure, firms that have a high co-opted director ratio (i.e., co-opted directors are those directors appointed after the firm's CEO took office; such directors may be "captured" by the CEO and not necessarily serve shareholder interests), and/or firms that have low CEO share ownership generally have weaker corporate governance and thus more severe managerial agency issues. We therefore partition the full sample into subsamples based on whether the firm is identified as having material weaknesses in internal controls (*ICW* = 1), as having a higher than median CEO tenure, as having a higher than median co-opted director ratio, or as having a higher than median CEO share ownership and re-estimate the baseline regressions (with control variables as well as firm and year fixed effects). In Panel A of Table 7, we report the coefficients of *OC/TA* and the p-values from Chow tests of *OC/TA* coefficient difference between the subsamples. We find that the positive effect of OC on tax avoidance mainly manifests in those firms that have stronger internal governance and control and therefore less severe managerial agency issues. This finding clearly suggests that more efficient firm-specific business processes and systems can

[19] We demean continuous variables used in the interaction terms before they are included in the analysis to alleviate concerns about inducing multicollinearity as well as to facilitate interpretation of the main effects (Aiken and West, 1991; Chen et al., 2012).

Table 6
Relation between firm value and tax avoidance conditional on organizational capital.

	(1)	(2)	(3)	(4)	(5)	(6)
	OC measure of Peters and Taylor (2017)			OC measure of Eisfeldt and Papanikolaou (2013)		
Dep. Var. =	Tobin's q	Tobin's q	Tobin's q	Tobin's q	Tobin's q	Tobin's q
OC/TA	1.183***	0.509***	1.154***	0.197***	0.151***	0.192***
	[0.43]	[0.16]	[0.43]	[0.06]	[0.04]	[0.06]
GETR	0.001			0.002***		
	[0.00]			[0.00]		
OC/TA*GETR	**0.030****			**0.005*****		
	[0.01]			**[0.00]**		
CETR		0.004***			0.004***	
		[0.00]			[0.00]	
OC/TA*CETR		**0.007****			**0.002*****	
		[0.00]			**[0.00]**	
CURRENT_ETR			0.000			0.001***
			[0.00]			[0.00]
OC/TA*CURRENT_ETR			**0.020***			**0.005*****
			[0.01]			**[0.00]**
SIZE	0.242***	0.186***	0.223***	0.188***	0.186***	0.182***
	[0.04]	[0.02]	[0.04]	[0.01]	[0.01]	[0.01]
LEV	−0.573***	−0.647***	−0.561***	−0.486***	−0.539***	−0.519***
	[0.09]	[0.06]	[0.08]	[0.04]	[0.04]	[0.04]
ROA	3.258***	3.786***	3.460***	3.185***	3.446***	3.408***
	[0.78]	[0.90]	[0.85]	[0.67]	[0.83]	[0.75]
R&D	3.019***	3.047***	2.928***	2.011***	1.991***	1.835***
	[0.99]	[0.71]	[0.89]	[0.34]	[0.37]	[0.34]
CAEX	0.989**	1.084**	1.132***	1.028***	1.018***	1.009***
	[0.40]	[0.42]	[0.40]	[0.31]	[0.39]	[0.36]
PPE	0.001	0.000	0.000	0.001	0.000	0.001
	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
Year effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	56,717	52,349	55,196	56,169	54,695	56,717
Adj. R^2	0.62	0.67	0.63	0.67	0.68	0.68

This table reports firm fixed effect regression results of the relation between firm value and tax avoidance conditional on OC. Standard errors are reported in parentheses. All variables are defined in Table 1. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level (two-tailed), respectively.

help the firm better capitalize on differences in tax rates, tax breaks, tax exemptions, tax deductions, and tax credits only if the firm also has good internal corporate governance and control (and thus less severe managerial agency problems). The finding also explains why shareholders generally view the effect of OC on tax avoidance to be value-enhancing.

4.6.2. External governance and the relation between tax avoidance and organizational capital

We also examine the effect of external governance/monitoring on the OC-tax avoidance relation by conducting subsample analyses based on various external governance/monitoring proxies. Specifically, we partition the full sample into subsamples based on whether the firm has higher than median institutional ownership, higher than median concentrated institutional ownership (based on the Herfindahl–Hirschman Index of institutional ownership), higher than median hostile takeover threat (based on the firm-specific hostile takeover index of Cain et al., 2017), or higher than median antitakeover defense (based on the *E*-index of Bebchuk et al., 2009), and re-estimate the baseline regressions. We report the results in Panel B of Table 7.

Firms with greater institutional ownership (*Inst_Own* = High), higher institutional ownership concentration (*Inst_Con* = High), higher hostile takeover index (*Hostile_Index* = High) or lower E-index (*E_Index* = low) are generally deemed to have stronger external monitoring strength (from institutional investors and/or the market for corporate control). We find that the OC-tax avoidance relation appears stronger for firms with low institutional ownership, higher institutional ownership concentration, lower hostile takeover index, and lower E-index. Thus, we find mixed, ambiguous intermediation effects of external monitoring on the OC-tax avoidance relation. Given that organizational capital is the agglomeration of firm-specific, *internal* knowledge, business processes and systems that facilitates the match between labor and physical production facilities and improves firm productivity, the finding that OC helps increase tax avoidance only when the firm has good internal governance and control in place, but not necessarily when the firm has good external monitoring, is perhaps not surprising.

4.6.3. Financing constraints and the relation between tax avoidance and organizational capital

Firms with a high level of OC are likely to have a lower amount of pledgeable collateral (because OC is an unrecognized intangible asset and is not pledgeable). If high OC firms have less pledgeable collateral, they may be more exposed to financing constraints, which may motivate them to engage in tax avoidance to increase internally generated funds (Edwards et al., 2016). Accordingly, we expect

Table 7
Relation between tax avoidance and organizational capital conditional on internal governance, external governance, and financial constraints.

Panel A: Effect of internal governance on the relation between tax avoidance and OC

	(1)	(2)	(3)	(4)	(5)	(6)
Dep. Var. =	GETR	GETR	CETR	CETR	CURRENT_ ETR	CURRENT_ ETR
Section I:	ICW = 0	ICW = 1	ICW = 0	ICW = 1	ICW = 0	ICW = 1
OC/TA	3.847***	−1.205	1.906**	2.349	2.759***	−2.200
	[1.45]	[1.14]	[0.81]	[2.39]	[0.99]	[3.67]
Chow test *p*-value	0.000		0.813		0.047	
Observations	17,760	1246	18,257	1306	18,011	1252
Section II:	TENURE=High	TENURE=Low	TENURE=High	TENURE=Low	TENURE=High	TENURE=Low
OC/TA	0.957	4.016***	2.759	4.350*	1.697	5.005***
	[1.885]	[1.820]	[2.365]	[2.429]	[1.789]	[2.129]
Chow test *p*-value	0.152		0.542		0.133	
Observations	10,476	7981	10,624	8123	10,533	8042
Section III:	CO_OPTED= High	CO_OPTED= Low	CO_OPTED= High	CO_OPTED= Low	CO_OPTED= High	CO_OPTED= Low
OC/TA	−2.037	4.070**	−2.36	3.683	−3.278	5.482**
	[2.594]	[1.987]	[3.188]	[2.811]	[3.069]	[2.218]
Chow test *p*-value	0.043		0.075		0.002	
Observations	6712	6449	6772	6508	6702	6470
Section IV:	CEO_OWN= High	CEO_OWN= Low	CEO_OWN= High	CEO_OWN= Low	CEO_OWN= High	CEO_OWN= Low
OC/TA	3.796	1.34	6.999***	0.093	4.187**	3.068
	[2.450]	[2.031]	[2.308]	[2.785]	[2.001]	[2.142]
Chow test *p*-value	0.338		0.012		0.623	
Observations	6296	7837	6323	8050	6248	8001

Panel B: Effect of external governance on the relation between tax avoidance and OC

	(1)	(2)	(3)	(4)	(5)	(6)
Dep. Var. =	GETR	GETR	CETR	CETR	CURRENT_ETR	CURRENT_ETR
Section I:	INST_OWN=High	INST_OWN=Low	INST_OWN=High	INST_OWN=Low	INST_OWN=High	INST_OWN=Low
OC/TA	2.133*	4.421***	1.645	3.236***	2.660*	2.861***
	[1.24]	[0.82]	[1.47]	[0.77]	[1.41]	[0.92]
Chow test *p*-value	0.035		0.185		0.860	
Observations	23,070	22,854	23,030	20,182	23,151	21,862
Section II:	INST_CON =High	INST_CON=Low	INST_CON=High	INST_CON=Low	INST_CON=High	INST_CON=Low
OC/TA	4.832***	2.317*	4.645***	2.003	4.111***	3.219**
	[0.86]	[1.32]	[1.05]	[1.69]	[0.89]	[1.57]
Chow test *p*-value	0.029		0.079		0.511	
Observations	21,615	20,522	19,490	20,209	20,770	20,488
Section III:	Hostile_Index = High	Hostile_Index = Low	Hostile_Index = High	Hostile_Index = Low	Hostile_Index = High	Hostile_Index = Low
OC/TA	2.509***	5.016***	2.053***	5.243***	1.966**	4.632***
	[0.61]	[0.93]	[0.68]	[1.09]	[0.90]	[0.86]
Chow test *p*-value	0.001		0.001		0.001	
Observations	25,256	26,186	23,225	24,113	24,539	25,459
Section IV:	*E*-Index = High	E-Index = Low	E-Index = High	E-Index = Low	E-Index = High	E-Index = Low
OC/TA	1.921	4.905***	3.368**	2.947	2.78	5.80***
	[1.85]	[1.68]	[1.59]	1.96]	[1.90]	[1.61]
Chow test *p*-value	0.121		0.830		0.128	
Observations	11,864	8707	12,119	8742	11,947	8672

Panel C: Effect of financial constraints on the relation between tax avoidance and OC

	(1)	(2)	(3)	(4)	(5)	(6)
Dep. Var. =	GETR	GETR	CETR	CETR	CURRENT_ ETR	CURRENT_ ETR
Section I:	High WW	Low WW	High WW	Low WW	High WW	Low WW
OC/TA	4.462***	1.549**	3.473***	1.072	2.927***	2.405***
	[0.54]	[0.64]	[0.62]	[1.16]	[0.56]	[0.85]
Chow test *p*-value	0.030		0.000		0.070	

(*continued on next page*)

Table 7 (*continued*)

Panel C: Effect of financial constraints on the relation between tax avoidance and OC

	(1)	(2)	(3)	(4)	(5)	(6)
Observations	28,557	28,277	25,422	27,014	27,733	27,884
Section II:	Non-div-payer	Div-payer	Non-div-payer	Div-payer	Non-div-payer	Div-payer
OC/TA	3.730***	0.530	3.877***	0.699	3.318***	−0.916
	[0.48]	[1.03]	[0.65]	[1.50]	[0.59]	[1.34]
Chow test *p*-value	0.000		0.000		0.000	
Observations	35,045	22,139	32,500	20,228	34,091	21,526

Panel D: Effect of OC on the relation between future cash flow and tax avoidance

	(1)	(2)	(3)
Tax avoidance =	GETR	CETR	CURRENT_ETR
Dep. Var. =	Cashflow	Cashflow	Cashflow
OC	0.0198***	0.0227***	0.0200***
	[0.00]	[0.00]	[0.00]
Tax Avoidance	0.0003***	0.0002***	0.0001***
	[0.00]	[0.00]	[0.00]
OC*Tax Avoidance	**0.0003****	**0.0002****	**0.0002****
	[0.00]	**[0.00]**	**[0.00]**
Observations	42,893	40,080	41,956
Adj. R-squared	0.42	0.41	0.42

This table reports firm fixed effect regression results of the relation between tax avoidance and OC conditional on internal governance, external governance, and financial constraints. Panel A reports the effect of internal governance on the relation between tax avoidance and OC, Panel B reports the effect of external governance/monitoring on the relation between tax avoidance and OC, and Panel C reports the effect of financial constraints on the relation between tax avoidance and OC. Panel D reports results of how OC influences the relation between future cash flow and tax avoidance. Standard errors are reported in parentheses. All variables are defined in Table 1. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level (two-tailed), respectively. Control variables, firm effects and year effects are included but not reported.

the relation between OC and tax avoidance to be more pronounced among financially constrained firms. We report the results of this analysis in Panel C of Table 7.

We classify firms into a high (low) financial constraints subsample if the WW Index (Whited and Wu, 2006) is above (below) the sample median or if they do not pay (do pay) dividends (Farre-Mensa and Ljungqvist, 2016). The results in Panel C of Table 7 consistently show that the relation between OC and tax avoidance is significantly stronger for the high financial constraints subsample than for the low financial constraints subsample. These results indicate that financial constraints accentuate the positive relation between OC and tax avoidance.[20]

4.6.4. *Organizational capital and the relation between future cash flow and tax avoidance*

We conjectured that high OC firms have incentives to avoid corporate tax to increase cash flows and returns, which are eventually shared by shareholders and key talents. If this conjecture holds, we expect that tax avoidance by high OC firms will increase future cash flow. We test this prediction using the following model:

where *Cashflow* is one-year-ahead cash flow (measured as income before extraordinary items minus common dividends scaled by total assets) and the other variables are as defined earlier. A positive coefficient of the interaction term (i.e., α_3) will support our prediction.

The results in Panel D of Table 7 show that the coefficient of the interaction term is positive and significant (at $p < 0.05$) in all regressions, implying that tax avoidance has a larger positive influence on future cash flow as the level of OC increases. This result also supports our findings in Section 4.6 that future cash flow is a channel through which tax avoidance by high OC firms increases firm value.

[20] We find that *OC/TA* is positively correlated with the WW index and negatively correlated with the dividend payer indicator (both significant at the 1% level), suggesting that high OC firms are exposed to more financing constraints. To investigate whether the subsample analyses based on financial constraints are driven by the relationship between financial constraints and tax avoidance, we further perform interaction regressions with control for financial constraints. Specifically, we construct an indicator, *HIGH_WW*, which equals 1 if the firm's WW index is higher than the sample median and 0 otherwise. We then regress the tax avoidance variables on *OC/TA*HIGH_WW* (*OC/TA*DIV_PAYER*) with control for *OC/TA*, financial constraints, other control variables as well as firm and year fixed effects. We find that *OC/TA* continues to be positively related to tax avoidance in different regressions. The relations between the financial constraint variables and tax avoidance are generally insignificant or mixed. Importantly, the coefficients of *OC/TA*HIGH_WW* (*OC/TA*DIV_PAYER*) are significantly positive (significantly negative), indicating that the relation between OC and tax avoidance is indeed more pronounced for financially constrained firms (untabulated).

$$Cashflow = \alpha_0 + \alpha_1 OC + \alpha_2 Tax\ Avoidance + \alpha_3 OC{*}Tax\ Avoidance + \alpha_4 SIZE + \alpha_5 MTB + \alpha_6 LEV + \alpha_7 ROA + \alpha_8 R\&D + \alpha_9 CAPEX + \alpha_{10} PPE + \sum_k \alpha_k Year\ Fixed\ Effects + \sum_l \alpha_l Firm\ Fixed\ Effects + \varepsilon \quad (5)$$

4.7. Robustness tests

4.7.1. Alternative specification to estimate the stock of organizational capital

To assess the robustness of our results, we also scale the stock of OC by physical assets (Eisfeldt and Papanikolaou, 2014; Hasan and Cheung, 2018) instead of total assets and report the results in Panel A of Table 8 (Columns 1–3). We find that the coefficient on *OC/PPE* is positive and significant ($p < 0.01$), consistent with the findings of the main analysis (Table 4).

It is likely that accounting practices as well as agency problems associated with SG&A expenses vary across industries. If so, the stock of OC will also vary across industries. To address this concern, we follow Li et al. (2018) and use the industry-median adjusted ratio of OC to total assets (*OC_TA_ADJ*) as an alternative measure of OC. The results reported in Columns (4) to (6) of Panel A indicate that the coefficients of *OC_TA_ADJ* are significantly positive ($p < 0.01$), consistent with the results reported in Table 4.

Next, we use the OC measure of Eisfeldt and Papanikolaou (2013, 2014) (*OC/TA_EP*) as an alternative measure of the stock of OC. This measure is very similar to Peters and Taylor's (2017) measure, except that Eisfeldt and Papanikolaou (2013) deflate SG&A expenses by the consumer price index. We report the results using this alternative measure of OC, which we scale by total assets, in Panel B of Table 8. The coefficients of *OC/TA_EP* in Columns (1) to (3) are positive and significant ($p < 0.01$) for all three measures of tax avoidance. We find similar results in Columns (4) to (6) when we scale the Eisfeldt and Papanikolaou (2013) OC measure by PPE.

The fraction of SG&A expenses devoted to accumulating OC as well as its depreciation rate may also vary across industries. To address this concern, we use the OC measure of Ewens et al. (2020) that employs industry-level parameter estimates (fraction of SG&A and depreciation rates) in estimating OC (*OC/TA_EPW*). Columns (1) to (3) of Panel C show that the coefficient of *OC/TA_EPW* remains positive and significant ($p < 0.01$) for all measures of tax avoidance.

We also employ the OC measure of Enache and Srivastava (2018). The authors suggest the use of net SG&A (total SG&A – Advertisement expenses – R&D expenses) because the investment in OC, which is aimed at improving organizational knowledge and capabilities, is typically commingled with SG&A expenses other than expenditures on advertising and research and development. Using cross-sectional regressions, Enache and Srivastava (2018) estimate the portion of net SG&A expense that is not accompanied by sales revenue, which the authors label as the investment portion of SG&A (a new measure of OC). We follow Enache and Srivastava (2018) and decompose SG&A expenses into a maintenance component and an investment component. We then capitalize the firm's investment component of SG&A expenses following the same procedure to estimate an alternative proxy for the stock of the firm's OC. Columns (4) to (6) of Panel C show that our inferences remain qualitatively similar when we use this alternative measure of OC in the estimation.

In sum, the positive relation between tax avoidance and OC is robust to use of alternative measures of OC.

4.7.2. Alternative measures of tax avoidance

Following prior studies, we use five alternative tax avoidance measures to assess the robustness of our findings. These include long-run CETR (*CETR_LONG*) (Dyreng et al., 2008), cash effective tax rate (*CASH_RATIO*) (Cen et al., 2017), two measures of UTB (*UTB_TOTAL* and *UTB_ETR*) (Armstrong et al., 2015; Hanlon et al., 2017; Neuman et al., 2020), and tax shelter probabilities (*SHELTER*) (Wilson, 2009). The results reported in Panel D of Table 8 indicate that the coefficients of *OC/TA* are positive and significant ($p < 0.01$) for all these alternative tax avoidance measures. These results corroborate our main findings in Table 4 that firms with high OC avoid more corporate tax.

4.7.3. Exclusion of high-tech firms

Panel B of Table 2 shows that the business equipment industry (i.e., computers, software, and electronic equipment) comprises the largest proportion of firms in our sample (20.15%). Studies suggest that technology firms are more R&D intensive and tax deductibility of R&D expenses provides these firms with considerable opportunity to engage in tax avoidance (Hanlon and Heitzman, 2010). To address the concern that our results are driven by technology firms, we reestimate the baseline model after excluding high-tech firms.[21] The summary regression results reported in Panel E of Table 8 show that the coefficients of *OC/TA* remain positive and highly significant ($p < 0.01$), indicating that the documented positive relation between OC and tax avoidance is not driven by high-tech firms.[22]

[21] Following Barton and Waymire (2004), we define high technology firms as the firms belonging to the following 3-digit SIC codes: aircraft (372), automotive (371), communications (481, 482, 489), electronics (363, 366, 369), film and entertainment (781, 783, 791), industrial machinery (351–356), office equipment (357), photography (381, 383, 384, 387) and electrical utilities (491, 493).

[22] We obtain very similar results when we exclude firms from the business equipment industry (Fama-French 12 industry classification).

Table 8
Robustness tests.

Panel A: Alternative scaling of OC and industry-median adjusted OC

	(1)	(2)	(3)	(4)	(5)	(6)
	Alternative scaling of OC			Industry-median adjusted OC		
Dep. Var. =	GETR	CETR	CURRENT_ETR	GETR	CETR	CURRENT_ETR
OC/PPE	**0.106***	**0.197*****	**0.260*****	–	–	–
	[0.06]	**[0.07]**	**[0.08]**			
OC/TA_ADJ	–	–	–	**3.396*****	**3.036*****	**2.597*****
				[0.41]	**[0.51]**	**[0.47]**
Other controls	Yes	Yes	Yes	Yes	Yes	Yes
Year effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	56,844	52,491	55,316	57,184	52,728	55,617
Adj. R^2	0.40	0.33	0.40	0.40	0.33	0.40

Panel B: OC measure of Eisfeldt and Papanikolaou (2013)

	(1)	(2)	(3)	(4)	(5)	(6)
Dep. Var. =	GETR	CETR	CURRENT_ETR	GETR	CETR	CURRENT_ETR
OC/TA_EP	**0.765*****	**0.691*****	**0.645*****	–	–	–
	[0.08]	**[0.11]**	**[0.12]**			
OC/PPE_EP	–	–	–	**0.023***	**0.039*****	**0.035****
				[0.01]	**[0.01]**	**[0.02]**
Other controls	Yes	Yes	Yes	Yes	Yes	Yes
Year effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	50,894	47,029	49,617	50,723	46,919	49,480
Adj. R^2	0.40	0.33	0.40	0.39	0.32	0.39

Panel C: OC measure of Ewens et al. (2020)**and**Enache and Srivastava (2018)

	(1)	(2)	(3)	(4)	(5)	(6)
Dep. Var. =	GETR	CETR	CURRENT_ETR	GETR	CETR	CURRENT_ETR
OC/TA_EPW	**7.728*****	**6.624*****	**6.463*****	–	–	–
	[0.71]	**[0.87]**	**[0.82]**			
OC/TA_ES	–	–	–	**4.093*****	**2.557*****	**1.446***
				[0.681]	**[0.874]**	**[0.818]**
Other controls	Yes	Yes	Yes	Yes	Yes	Yes
Year effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	56,712	52,299	55,182	36,867	33,815	35,960
Adj. R^2	0.40	0.33	0.40	0.41	0.32	0.41

Panel D: Alternative measures of tax avoidance

	(1)	(2)	(3)	(4)	(5)
Dep. Var. =	CETR_LONG	CASH_RATIO	UTB_TOTAL	UTB_ETR	SHELTER
OC/TA	**0.789*****	**2.721*****	**0.061*****	**0.234*****	**0.543*****
	[0.20]	**[0.49]**	**[0.02]**	**[0.07]**	**[0.03]**
Other controls	Yes	Yes	Yes	Yes	Yes
Year effects	Yes	Yes	Yes	Yes	Yes
Firm effects	Yes	Yes	Yes	Yes	No
Industry effects	No	No	No	No	Yes
Observations	45,193	55,532	19,677	16,199	60,506
Adj. R^2/ Pseudo R^2	0.52	0.32	0.73	0.72	0.64

Panel E: Exclusion of high-tech firms

	(1)	(2)	(3)
Dep. Var. =	GETR	CETR	CURRENT_ETR
OC/TA	**3.564*****	**3.046*****	**2.819*****
	[0.46]	**[0.54]**	**[0.54]**
Other controls	Yes	Yes	Yes
Year effects	Yes	Yes	Yes
Firm effects	Yes	Yes	Yes
Observations	50,743	46,719	49,341
Adj. R^2	0.41	0.33	0.41

This table reports firm fixed effect regression results of the relation between tax avoidance and OC using alternative scaling of OC (Columns 1–3), industry-median adjusted OC (Columns 4–6) (Panel A), the OC measure of Eisfeldt and Papanikolaou (2013, 2014) (Panel B), the OC measure of

Ewens et al. (2020) and Enache and Srivastava (2018) (Panel C), alternative measures of tax avoidance (*CETR_LONG*, *CASH_RATIO*, *UTB_TOTAL*, *UTB_ETR* and *SHELTER*) (Panel D), and a sample that excludes high-tech firms (Panel E). The specification of the tests reported in this table is similar to the tests reported in Table 4. Standard errors are reported in parentheses. All variables are defined in Table 1. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels (two-tailed), respectively.

4.7.4. Alternative regression model

In the main analyses, we use regression models that control for firm fixed effects to account for unobserved firm-specific heterogeneity that may affect the estimation. One concern is that the dependent variable and many of the independent variables may be sticky over time, such that there is not much temporal variation. In such a circumstance, firm fixed effects could provide biased estimates. To alleviate this concern, we re-estimate Eq. 3 with industry fixed effects and separately with no fixed effects. Appendix Table A3 shows that the coefficients of *OC/TA* are positive and statistically significant at the 1% level in five out of the six regressions (except Column (2) with *CETR* as the dependent variable and with *no* fixed effects), corroborating the findings from the main analysis.

4.7.5. Using a flow measure of SG&A scaled by total assets

Following the literature, we use the perpetual inventory method to capitalize the firm's SG&A expenses and estimate its stock of OC. As a robustness check, we also use a flow measure of SG&A scaled by total assets (*SGA/TA*) as the main independent variable and re-estimate the main regressions. The results in Appendix Table A4 show that the coefficients of *SGA/TA* are positive across all three regressions with *GETR*, *CETR* and *CURRENT_ETR* as the dependent variable, respectively. Moreover, the coefficient of the flow measure is statistically significant at the 1% level when *GETR* (i.e., GAAP effective tax rate multiplied by −100) is the dependent variable. Thus, the regression results based on the flow measure are qualitatively similar to, albeit weaker than, those based on the stock measure, which is not surprising given that the flow measure ignores the accumulation of the firm's past OC investments.

4.7.6. Controlling for CEO turnover

Another potential concern is that the documented positive relationship between OC and tax avoidance is related to executive knowledge rather than to OC. For example, Dyreng et al. (2010) show that individual top executives have incremental effects in determining corporate tax avoidance. To disentangle these effects, we construct a *CEO_Turnover* indicator variable that equals 1 if the CEO in fiscal year *t* and the CEO in fiscal year *t*-1 are different persons, and 0 otherwise. We then add *CEO_Turnover* as an additional control variable and also interact *CEO_Turnover* with OC in the regressions. We report the results in Appendix Table A5.

In Columns (1)–(3), we include the *CEO_Turnover* as an additional control. We find that the coefficients of *CEO_Turnover* are positive in all three regressions and statistically significant for the first regression (with *GETR* as the dependent variable). Nevertheless, the coefficients of *OC/TA* continue to be positive and significant at the 1% level in all three regressions. In Columns (4) to (6), we further add the interaction term, *OC/TA*CEO_Turnover*, in the regressions. We find that the coefficients of the interaction term are statistically insignificant in all three regressions. However, the coefficients of *OC/TA* remain positive and statistically significant at the 1% level in all three regressions. These findings suggest that executive turnover does not affect the positive OC-tax avoidance relation.

4.7.7. Controlling for tax haven link of directors

The relationship between OC and tax avoidance may be attributed to the knowledge of a few board members. Jiang et al. (2018) show that firms with directors who are connected to firms domiciled in tax haven countries exhibit greater tax avoidance. Accordingly, firms may not need to build complex organizational structures or expertise to avoid taxes; instead, they may strategically appoint directors to avoid tax.

To alleviate the above concern, we construct an indicator variable *TAX_HAVEN_LINK*, which equals 1 if the firm in our sample shares at least one director with another firm that is headquartered or incorporated in a tax haven country.[23] We then include *TAX_HAVEN_LINK* as an additional control variable in the regressions. In Appendix Table A6, we find that the coefficients of *TAX_HAVEN_LINK* are positive in two out of three regressions, albeit statistically insignificant. Moreover, after controlling for *TAX_HAVEN_LINK*, the coefficients of OC/*TA* remain positive and statistically significant at the 1% level in all three regressions. These findings suggest that the positive effect of organizational capital on tax avoidance is not driven mainly by directors who are connected to firms incorporated or domiciled in tax haven countries.

4.8. Organizational capital and tax haven strategy

Next, we test whether firms adopt a strategy of establishing subsidiaries in tax havens to reduce their effective tax rates. Bennedsen and Zeume (2018, p. 1221) define a tax haven as "a state or territory in which corporate and personal tax rates are so low that foreign companies or individuals have incentives to establish shell companies to shield their income from higher tax liabilities at home." A recent report shows that U.S.-based multinational corporations use tax havens to avoid paying an estimated $100 billion in federal income tax.[24]

[23] We obtain the director data to construct the *TAX_HAVEN_LINK* indicator from the BoardEx database. The tax haven countries in BoardEx include Bermuda, Cayman Islands, Republic of Ireland, Singapore, and Switzerland.

[24] https://www.forbes.com/sites/niallmccarthy/2017/10/24/which-u-s-companies-have-the-most-tax-havens-infographic/#6094dbbc5706

Table 9
Relation between tax haven strategy and organizational capital.

	(1)	(2)
	Logit	FFE
Dep. Var. =	TAX_HAVEN_D	TAX_HAVEN_LN
OC/TA	**0.110*****	**0.024*****
	[0.03]	**[0.00]**
Other controls	Yes	Yes
Year effects	Yes	Yes
Firm effects	No	Yes
Industry effects	Yes	No
Observations	63,140	63,273
Pseudo R^2/ Adj. R^2	0.31	0.76

This table reports regression results of the relation between OC and tax haven strategy. We obtain tax-haven data from Scott Dyreng's personal webpage. Standard errors are reported in parentheses. The unreported controls used in this table are very similar to that reported in Table 4. All variables are defined in Table 1. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels (two-tailed), respectively.

We obtain data on tax havens from Scott Dyreng's website.[25] We use two measures of tax haven: (1) an indicator variable, *TAX_HAVEN_D*, that equals one if the firm has a tax haven subsidiary, 0 otherwise; and (2) the natural log of the number of tax haven subsidiaries (*TAX_HAVEN_LN*).

The logit regression results reported in Column (1) of Table 9 show that firms with more OC are more likely to establish subsidiaries in tax havens (coefficient = 0.110, $p < 0.01$). The marginal effect estimated from the model indicates a 1.38% greater probability of establishing a subsidiary in a tax haven for a one unit increase in OC/TA. Similarly, Column (2) shows that firms with OC have more subsidiaries in tax havens (coefficient = 0.024, $p < 0.01$). Taken together, the results in Table 9 suggest that firms with higher levels of OC tend to establish subsidiaries in tax havens.[26]

5. Conclusion

This study examines the effect of a firm's organizational capital (OC) on its tax avoidance. It also investigates how shareholders of high OC firms value the tax avoidance. Using a large sample of U.S. firms during 1986–2016, we find robust evidence that firms with higher OC avoid more corporate tax. This result is robust to use of alternative measures of OC and of tax avoidance and is not driven by omitted variables or reverse causality. In addition, we find that shareholders positively value tax avoidance of high OC firms. In cross-sectional analyses, we find that the relation between OC and tax avoidance is stronger for firms with better internal governance and information environment and for firms that face more financing constraints. Lastly, we show that firms with more OC are more likely to use tax haven strategies to avoid tax.

Our findings contribute to a better understanding of the relationship between tax avoidance and OC. Whereas prior studies show that tax avoidance by well-governed firms is positively valued by shareholders, we provide evidence suggesting that shareholders positively value tax avoidance of high OC firms. The empirical evidence provided in our study offers valuable implications for tax authorities and policymakers. The finding that OC is an important factor contributing to an increasing disconnect between statutory tax rates and effective tax rates among US firms may help tax authorities and policy-makers gain a better understanding of the interplay between OC and tax avoidance, and design and implement suitable strategies to minimize tax avoidance. Moreover, by providing rigorous empirical evidence on the relation between OC and corporate tax avoidance, our study contributes to the debate on the recognition of intangible assets in financial statements. Our results suggest that standard-setting bodies should consider incorporating the disclosure of intangible assets (such as OC) in the financial statements especially because of their implications for firm-level outcomes.

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[25] https://sites.google.com/site/scottdyreng/Home/data-and-code/EX21-Dataset. For tax haven analysis, we restrict our analysis to the period 1993 to 2014.

[26] Note that we do not use the firm fixed effect logit model in this analysis. Neyman and Scott (1948) show that fixed effects estimators of nonlinear panel data models can be severely biased because of the incidental parameter problem.

Appendix A

Table A1
Relations between tax avoidance and individual components of organizational capital

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Dep. Var. =	GETR	GETR	GETR	CETR	CETR	CETR	CURRENT_ETR	CURRENT_ETR	CURRENT_ETR
BC/TA	**1.768**			**2.674**			**1.805**		
	[1.32]			**[1.78]**			**[1.62]**		
HC/TA		**−0.437**			**−1.063****			**−0.634**	
		[0.40]			**[0.50]**			**[0.46]**	
RES_OC/TA			**2.514*****			**2.448*****			**2.201*****
			[0.43]			**[0.53]**			**[0.49]**
SIZE	−1.416***	−1.435***	−1.292***	−0.917***	−0.942***	−0.807***	−1.547***	−1.568***	−1.446***
	[0.12]	[0.12]	[0.12]	[0.17]	[0.17]	[0.17]	[0.15]	[0.15]	[0.15]
LEV	1.263**	1.243**	1.256**	−0.089	−0.11	−0.08	1.669***	1.645***	1.664***
	[0.49]	[0.49]	[0.49]	[0.58]	[0.58]	[0.58]	[0.54]	[0.54]	[0.54]
MTB	0.100***	0.102***	0.089**	0.051	0.052	0.043	0.061	0.062	0.052
	[0.04]	[0.04]	[0.04]	[0.08]	[0.08]	[0.08]	[0.05]	[0.05]	[0.05]
ROA	−3.135***	−3.124***	−3.170***	8.927**	8.935**	8.834**	−1.505	−1.504	−1.572
	[0.68]	[0.68]	[0.67]	[3.72]	[3.74]	[3.71]	[1.08]	[1.08]	[1.07]
FOR_INC	0.760***	0.760***	0.745***	1.689***	1.689***	1.687***	0.802**	0.803**	0.800**
	[0.27]	[0.27]	[0.27]	[0.35]	[0.35]	[0.35]	[0.33]	[0.33]	[0.33]
CASH	1.319***	1.292***	1.364***	3.841***	3.794***	3.866***	0.633	0.601	0.67
	[0.34]	[0.34]	[0.34]	[0.59]	[0.59]	[0.59]	[0.42]	[0.42]	[0.42]
PPE	−0.639	−0.656	−0.6	0.872	0.836	0.882	1.645**	1.635**	1.690**
	[0.62]	[0.61]	[0.61]	[0.98]	[0.98]	[0.97]	[0.74]	[0.74]	[0.73]
INTAN	−0.295	−0.394	−0.172	−0.724	−0.901	−0.624	−1.557***	−1.678***	−1.472**
	[0.56]	[0.56]	[0.57]	[0.69]	[0.69]	[0.69]	[0.60]	[0.60]	[0.60]
NOL	2.576***	2.576***	2.532***	4.840***	4.837***	4.813***	3.887***	3.886***	3.855***
	[0.25]	[0.25]	[0.25]	[0.31]	[0.31]	[0.31]	[0.29]	[0.29]	[0.29]
ΔNOL	−0.083	−0.08	−0.099	−1.907***	−1.908***	−1.933***	−0.818***	−0.811***	−0.825***
	[0.33]	[0.33]	[0.32]	[0.38]	[0.38]	[0.38]	[0.27]	[0.27]	[0.26]
EQUITY_INC	73.313***	72.531***	71.031***	180.973***	179.412***	177.925***	142.766***	141.917***	140.980***
	[21.88]	[21.90]	[21.95]	[28.41]	[28.36]	[28.37]	[25.33]	[25.30]	[25.28]
MA_SCORE	−0.772	−0.671	−0.812	−4.272***	−4.126***	−4.258***	−0.921	−0.804	−0.935
	[0.87]	[0.87]	[0.87]	[1.33]	[1.33]	[1.32]	[1.05]	[1.05]	[1.05]
Year effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	57,103	57,103	57,103	52,652	52,652	52,652	55,546	55,546	55,546
Adj. R^2	0.33	0.40	0.41	0.41	0.33	0.40	0.40	0.41	0.33

This table presents firm fixed effect regression results of the relations between corporate tax avoidance and individual components of OC. Standard errors are reported in parentheses. All variables are defined in Table 1. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level (two-tailed), respectively.
Bold indicates main variable of interest.

Table A2
Entropy balancing method.

Panel A: Covariate balance.

	Before: Without weighting					
	Treat			Control		
Variables	Mean	Variance	Skewness	Mean	Variance	Skewness
SIZE	4.848	5.129	0.098	5.938	4.410	−0.104
LEV	0.151	0.042	3.357	0.267	0.093	2.540
MTB	2.030	6.574	17.040	2.044	6.705	17.080
ROA	0.179	0.019	−9.821	0.185	0.017	−13.100
FOR_INC	0.299	0.210	0.879	0.326	0.220	0.742
CASH	0.181	0.061	6.407	0.210	0.128	6.167
PPE	0.236	0.033	1.654	0.405	0.118	1.269
INTAN	0.130	0.033	2.433	0.191	0.082	2.460
NOL	0.348	0.227	0.638	0.350	0.228	0.628
ΔNOL	0.000	0.120	12.510	0.001	0.046	16.360
EQUITY_INC	0.000	0.000	2.272	0.001	0.000	2.037

(*continued on next page*)

Table A2 (*continued*)

Panel A: Covariate balance.

	Before: Without weighting					
		Treat			Control	
Variables	Mean	Variance	Skewness	Mean	Variance	Skewness
MA_SCORE	0.030	0.010	1.818	−0.007	0.016	1.709
	After: With weighting					
		Treat			Control	
Variables	Mean	Variance	Skewness	Mean	Variance	Skewness
SIZE	4.848	5.129	0.098	4.848	5.129	0.098
LEV	0.151	0.042	3.357	0.151	0.042	3.357
MTB	2.030	6.574	17.040	2.030	6.574	17.040
ROA	0.179	0.019	−9.821	0.179	0.019	−9.821
FOR_INC	0.299	0.210	0.879	0.299	0.210	0.879
CASH	0.181	0.061	6.407	0.181	0.061	6.407
PPE	0.236	0.033	1.654	0.236	0.033	1.654
INTAN	0.130	0.033	2.433	0.130	0.033	2.433
NOL	0.348	0.227	0.638	0.348	0.227	0.638
ΔNOL	0.000	0.120	12.510	0.000	0.120	12.510
EQUITY_INC	0.000	0.000	2.272	0.000	0.000	2.272
MA_SCORE	0.030	0.010	1.818	0.030	0.010	1.818

Panel B: Regression results based on the entropy balanced sample

	(1)	(2)	(3)
Variables	GETR	CETR	CURRENT_ETR
OC/TA	**3.602*** [0.529]**	**3.537*** [0.664]**	**2.797*** [0.585]**
Other controls	Yes	Yes	Yes
Year effects	Yes	Yes	Yes
Firm effects	Yes	Yes	Yes
Observations	57,184	52,728	55,617
Adj. R-squared	0.45	0.36	0.43

This table reports the entropy balancing regression estimates. Panel A reports a comparison of mean, variance, and skewness of the variables between treated and control groups. Panel B reports the entropy balancing regression results. Standard errors are reported in parentheses. All variables are defined in Table 1. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level (two-tailed), respectively.

Table A3
Relation between tax avoidance and organizational capital: OLS regression results without firm fixed effects.

	(1)	(2)	(3)	(4)	(5)	(6)
Dep. Var. =	GETR	CETR	CURRENT_ETR	GETR	CETR	CURRENT_ETR
OC/TA	**1.695*** [0.27]**	**−0.505 [0.37]**	**0.921*** [0.31]**	**2.581*** [0.29]**	**0.906*** [0.34]**	**1.838*** [0.30]**
SIZE	−0.474***	−0.724***	−0.654***	−0.713***	−0.879***	−1.076***
	[0.06]	[0.07]	[0.07]	[0.06]	[0.08]	[0.07]
LEV	0.633	2.413***	3.556***	2.180***	3.827***	5.037***
	[0.47]	[0.53]	[0.53]	[0.45]	[0.52]	[0.49]
MTB	0.223***	0.263***	0.138**	0.169***	0.252***	0.118**
	[0.05]	[0.05]	[0.06]	[0.04]	[0.04]	[0.05]
ROA	−7.925***	−2.955**	−10.077***	−5.892***	−0.343	−6.819***
	[1.45]	[1.27]	[1.87]	[1.06]	[0.85]	[1.23]
FOR_INC	1.293***	−0.425	−0.843***	0.406*	−0.928***	−1.090***
	[0.23]	[0.28]	[0.27]	[0.23]	[0.29]	[0.28]
CASH	5.062***	6.440***	3.212***	3.235***	3.918***	1.032***
	[0.36]	[0.42]	[0.42]	[0.33]	[0.37]	[0.37]
PPE	2.691***	7.724***	10.098***	0.373	4.179***	6.044***
	[0.50]	[0.60]	[0.61]	[0.57]	[0.65]	[0.64]
INTAN	0.247	1.357**	1.537***	−0.938*	−0.424	−1.334**
	[0.50]	[0.56]	[0.58]	[0.48]	[0.55]	[0.54]
NOL	4.536***	7.917***	7.439***	3.058***	6.205***	5.206***
	[0.22]	[0.26]	[0.26]	[0.22]	[0.26]	[0.26]
ΔNOL	−0.458	−1.983***	−0.774**	−0.383	−1.922***	−0.756**
	[0.36]	[0.40]	[0.39]	[0.30]	[0.34]	[0.32]
EQUITY_INC	96.672***	115.090***	137.900***	91.932***	107.312***	125.555***
	[22.08]	[27.93]	[24.86]	[20.82]	[27.39]	[25.45]
MA_SCORE	2.090**	3.419***	0.506	1.210	1.193	0.022

(*continued on next page*)

Table A3 (*continued*)

	(1)	(2)	(3)	(4)	(5)	(6)
Dep. Var. =	GETR	CETR	CURRENT_ETR	GETR	CETR	CURRENT_ETR
	[0.96]	[1.14]	[1.12]	[0.97]	[1.10]	[1.10]
Year effects	No	No	No	Yes	Yes	Yes
Industry effects	No	No	No	Yes	Yes	Yes
Observations	57,184	52,728	55,617	57,184	52,728	55,617
Adj. R^2	0.05	0.07	0.08	0.14	0.13	0.16

This table presents OLS regression results of the relation between corporate tax avoidance and OC. Columns (1)–(3) report the regression results with no fixed effects and Columns (4)–(6) report the regression results with both industry fixed effects and year fixed effects. Standard errors are reported in parentheses. All variables are defined in Table 1. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level (two-tailed), respectively.

Table A4
Relation between tax avoidance and the flow measure of SG&A.

	(1)	(2)	(3)
Dep. Var. =	GETR	CETR	CURRENT_ETR
SGA/TA	**1.830*** **	**0.278**	**0.673**
	[0.38]	**[0.48]**	**[0.45]**
SIZE	−1.314***	−1.080***	−1.540***
	[0.13]	[0.17]	[0.16]
LEV	1.250**	−0.138	1.690***
	[0.51]	[0.59]	[0.55]
MTB	0.030	−0.058	0.013
	[0.04]	[0.05]	[0.05]
ROA	−3.048***	15.258***	−0.067
	[0.99]	[1.39]	[1.17]
FOR_INC	0.708***	1.675***	0.693**
	[0.27]	[0.36]	[0.33]
CASH	0.579	3.429***	0.203
	[0.39]	[0.50]	[0.47]
PPE	−1.308**	−0.362	0.841
	[0.66]	[0.84]	[0.77]
INTAN	−0.529	−1.245*	−1.906***
	[0.59]	[0.66]	[0.63]
NOL	2.530***	4.944***	3.969***
	[0.25]	[0.32]	[0.30]
ΔNOL	0.099	−1.863***	−0.884***
	[0.34]	[0.38]	[0.27]
EQUITY_INC	88.378***	207.559***	161.562***
	[23.20]	[30.17]	[26.63]
MA_SCORE	−1.454	−5.439***	−1.636
	[0.91]	[1.22]	[1.10]
Year effects	Yes	Yes	Yes
Firm effects	Yes	Yes	Yes
Observations	53,727	49,691	52,382
Adj. R^2	0.05	0.04	0.05

This table presents firm fixed effect regression results of the relation between corporate tax avoidance and the flow measure of SG&A scaled by total assets (SGA/TA). The dependent variables in Columns (1), (2) and (3) are *GETR*, *CETR*, and *CURRENT_ETR*, respectively. Standard errors are reported in parentheses. All variables are defined in Table 1. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level (two-tailed), respectively.

Table A5
Relation between tax avoidance and organizational capital after controlling for CEO turnover.

	(1)	(2)	(3)	(4)	(5)	(6)
	CEO Turnover as an additional control			CEO Turnover interacted with OC/TA		
Dep. Var. =	GETR	CETR	CURRENT_ETR	GETR	CETR	CURRENT_ETR
OC/TA	**2.749****	**4.451*****	**4.787*****	**2.593****	**4.754*****	**4.925*****
	[1.21]	**[1.50]**	**[1.23]**	**[1.24]**	**[1.49]**	**[1.26]**
CEO_Turnover	**1.022*****	**0.206**	**0.458**	**0.813****	**0.612**	**0.686**
	[0.26]	**[0.34]**	**[0.31]**	**[0.38]**	**[0.47]**	**[0.46]**
OC/TA*				**0.679**	**−1.307**	**−0.732**
CEO_Turnover				**[0.93]**	**[1.16]**	**[1.28]**
SIZE	−0.308	0.366	−0.210	−0.312	0.375	−0.208
	[0.23]	[0.29]	[0.27]	[0.23]	[0.29]	[0.27]

(*continued on next page*)

Table A5 (*continued*)

	(1)	(2)	(3)	(4)	(5)	(6)
	CEO Turnover as an additional control			CEO Turnover interacted with OC/TA		
Dep. Var. =	GETR	CETR	CURRENT_ETR	GETR	CETR	CURRENT_ETR
LEV	2.901***	1.148	2.732***	2.900***	1.147	2.731***
	[0.77]	[0.95]	[0.91]	[0.77]	[0.95]	[0.91]
MTB	−0.089	0.011	−0.222**	−0.089	0.010	−0.221**
	[0.08]	[0.10]	[0.09]	[0.08]	[0.10]	[0.09]
ROA	−9.536***	13.414***	−0.387	−9.522***	13.379***	−0.411
	[1.71]	[2.48]	[2.28]	[1.71]	[2.48]	[2.28]
FOR_INC	0.811**	1.598***	1.541***	0.815**	1.591***	1.538***
	[0.35]	[0.47]	[0.44]	[0.35]	[0.47]	[0.44]
CASH	2.549***	5.765***	1.824*	2.535***	5.788***	1.839*
	[0.79]	[1.10]	[1.03]	[0.79]	[1.10]	[1.03]
PPE	−0.776	−0.808	−0.279	−0.785	−0.797	−0.269
	[1.06]	[1.47]	[1.41]	[1.06]	[1.47]	[1.42]
INTAN	1.082	−0.253	0.110	1.068	−0.227	0.122
	[0.83]	[0.99]	[0.94]	[0.83]	[0.99]	[0.94]
NOL	0.623**	1.937***	1.896***	0.619**	1.943***	1.901***
	[0.30]	[0.41]	[0.37]	[0.30]	[0.41]	[0.37]
ΔNOL	2.281*	−0.943	−1.221**	2.277*	−0.933	−1.219**
	[1.22]	[0.72]	[0.61]	[1.23]	[0.72]	[0.61]
EQUITY_INC	23.678	175.059***	94.744**	23.770	174.557***	94.514**
	[33.96]	[42.50]	[37.44]	[33.95]	[42.53]	[37.46]
MA_SCORE	0.407	−4.833***	−2.181	0.409	−4.831***	−2.177
	[0.92]	[1.38]	[1.35]	[0.92]	[1.38]	[1.35]
Year effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	19,795	20,093	19,896	19,795	20,093	19,896
Adj. R^2	0.32	0.31	0.36	0.32	0.31	0.36

This table presents firm fixed effect regression results of the relation between corporate tax avoidance and OC after also controlling for CEO turnover. Columns (1) to (3) include CEO turnover as an additional control and Columns (4) to (6) also include the interaction between OC and CEO turnover. Standard errors are reported in parentheses. All variables are defined in Table 1. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level (two-tailed), respectively.

Table A6
Relation between tax avoidance and organizational capital after controlling for director's tax haven connection.

	(1)	(2)	(3)
Dep. Var. =	GETR	CETR	CURRENT_ETR
OC/TA	**5.390*** **	**2.868*** **	**4.108*** **
	[1.39]	**[1.07]**	**[1.14]**
SIZE	−0.380	−0.270	−0.825***
	[0.26]	[0.29]	[0.28]
LEV	2.361***	0.268	1.355
	[0.88]	[0.89]	[0.88]
MTB	−0.077	−0.032	−0.244***
	[0.06]	[0.08]	[0.08]
ROA	−2.212	17.510***	5.299**
	[1.77]	[2.32]	[2.11]
FOR_INC	0.900**	2.017***	0.881**
	[0.39]	[0.47]	[0.44]
CASH	2.447***	4.889***	3.122***
	[0.79]	[0.96]	[0.84]
PPE	0.501	0.127	2.799**
	[1.03]	[1.39]	[1.27]
INTAN	0.960	0.004	−0.810
	[0.86]	[0.92]	[0.89]
NOL	0.991***	2.547***	2.204***
	[0.32]	[0.41]	[0.39]
ΔNOL	−0.345	−1.681***	−1.092**
	[0.71]	[0.55]	[0.43]
EQUITY_INC	52.445	225.934***	134.299***
	[42.41]	[49.82]	[44.01]
MA_SCORE	−0.110	−2.306	−0.084
	[0.97]	[1.46]	[1.39]
TAX_HAVEN_LINK	**0.475**	**−0.121**	**0.108**
	[0.48]	**[0.62]**	**[0.52]**
Year effects	Yes	Yes	Yes

(*continued on next page*)

Table A6 (*continued*)

	(1)	(2)	(3)
Firm effects	Yes	Yes	Yes
Observations	22,622	23,062	22,887
Adj. R^2	0.41	0.36	0.42

This table presents firm fixed effect regression results of the relation between corporate tax avoidance and OC after also controlling for director's tax haven connection (TAX_HAVEN_LINK). Standard errors are reported in parentheses. All variables are defined in Table 1. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level (two-tailed), respectively.

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