

How Does Tax Avoidance Affect Corporate Transparency?

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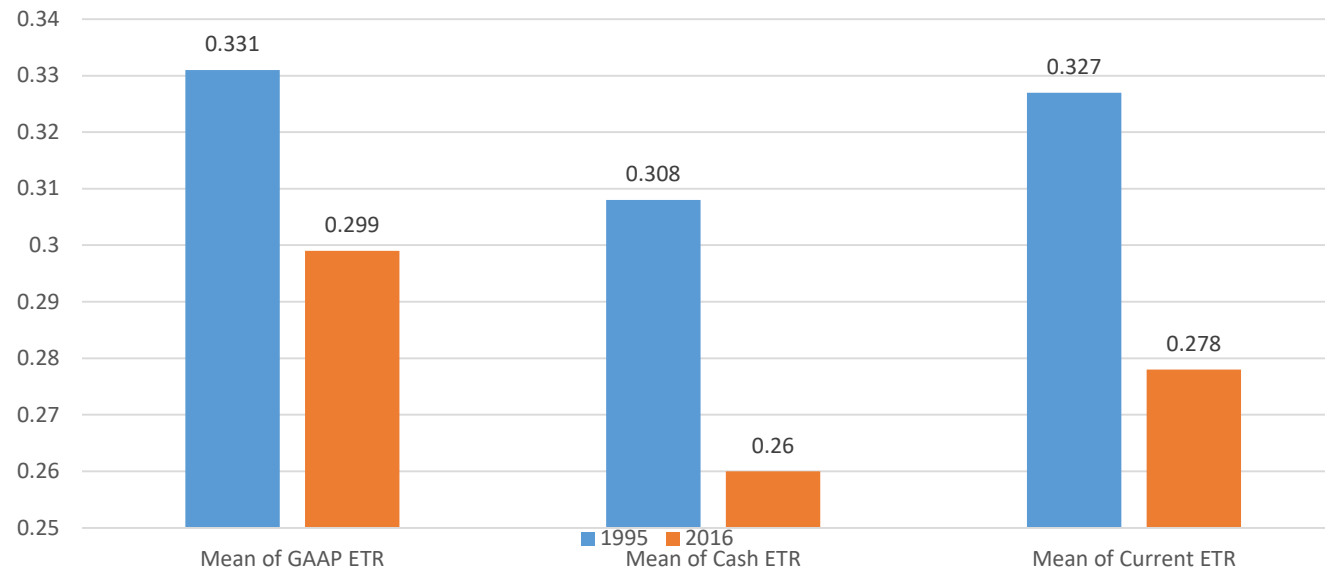
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Increase in corporate tax avoidance over the last three decades

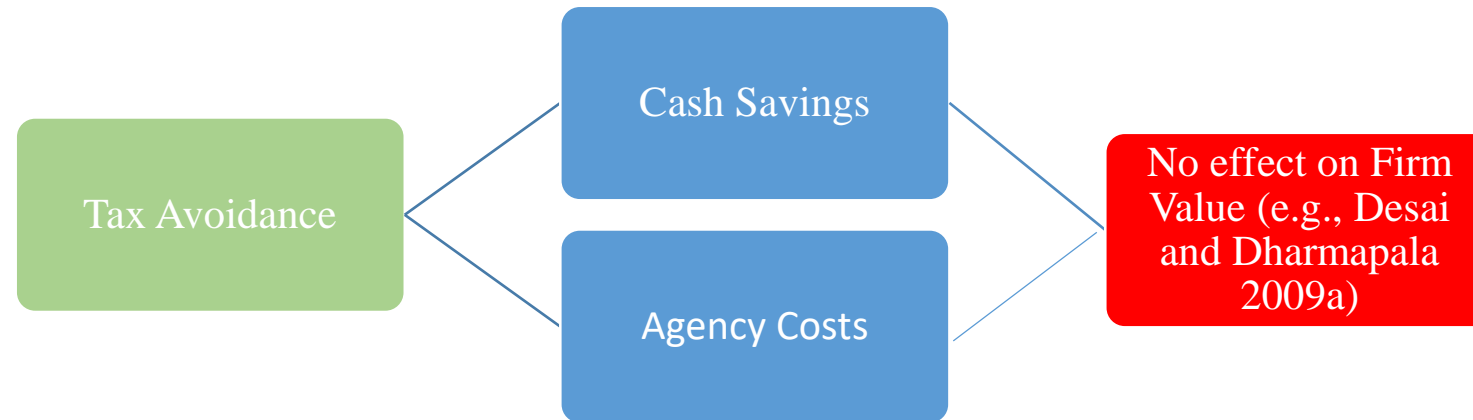
- Dyreng, Hanlon, Maydew and Thornock (2017) find that cash effective tax rates have decreased by approximately 10 percent over a 25-year period from 1988 to 2012.

Change in ETRs over the last two decades

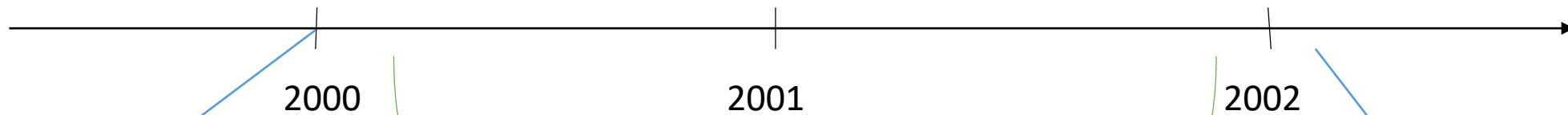


What are the consequences?

- Traditional views suggest that corporate tax avoidance increases after-tax cash flows and thus increases firm value (e.g., Graham and Tucker 2006 and Wilson 2009).
- Desai and Dharmapala (2009) find that corporate tax avoidance does not increase firm value.
 - Agency-based theory of corporate tax avoidance: sophisticated tax avoidance transactions could create opportunities for managerial rent extraction. These agency costs could cancel out the positive effects of cash tax savings.



Anecdotal Evidence of Dynegy Tax Scandal



Wall Street Journal suggests that earnings by energy trading firms are not supported by cash flows

A tax shelter developed by Arthur Andersen enabled Dynegy to misclassify a \$300 million increase in financing cash flow from a loan as operating cash flows in 2000 and 2001. This tax sheltering activity also increased reported earnings by 12%.

Wall Street Journal revealed the tax shelter to the public which resulted in an SEC investigation of Dynegy.

Mixed findings on other economic consequences:

- Tax avoidance decreases the cost of equity capital (e.g., Goh, Lee, Lim and Shevlin 2016)
- Tax avoidance increases the cost of debt capital (e.g., Hasan et al. 2014, Shevlin, Urcan and Vasvari 2013).
- The effect of tax avoidance on the cost of equity is non-linear with the cost of equity decreasing for increased avoidance at low tax avoidance levels and increasing with increased tax avoidance at high levels of tax avoidance (Cook, Moser, and Omer 2017).

Prior studies on the transparency effect of TA

On one hand...



- Kim, Li and Zhang (2011) find that tax avoidance increases stock price crash risk, suggesting lower transparency.
- Frank, Lynch and Rego (2009) find a positive association between tax aggressiveness and accrual management.
- Balakrishnan, Blouin, and Guay (2018) find negative associations between tax avoidance and multiple proxies for corporate transparency, including information asymmetry, analyst forecast errors and earnings quality.
- Donohoe and Knechel (2014) find that more complex tax activities increase financial reporting risk and lead to higher audit fees and presumably higher audit effort.
- Hanlon, Krishnan, and Mills (2012) find that large book-tax differences are associated with higher audit fees.

Prior studies on the transparency effect of TA

- Erickson, Hanlon, and Maydew (2004) find that firms engaged in accounting frauds pay more taxes to support inflated earnings, suggesting a negative association between earnings management and tax avoidance.

on the other hand...



- Lennox, Lisowsky, and Pittman (2013) find an association between tax avoidance and a lower probability of committing accounting fraud.
- Dhaliwal, Gleason, and Mills (2004) and Cook, Huston, and Omer (2008): Tax avoidance creates cash savings and increases the bottom line income, thus reducing manipulation of earnings through other methods .
- Because of career concerns and other incentives (e.g., Kothari, Shu, and Wysocki 2009), managers are usually willing to make forthright disclosure about the improved performance resulting from tax avoidance activities.

Our predictions

- Tax avoidance: the entire continuum of all the tax-planning activities to reduce firms' explicit tax burden.
 - Prior studies use measures that mostly capture the entire continuum:
Dhaliwal et al. (2004): ETR
Kim et al. (2011): Long term Cash ETR
- The effect of tax avoidance on corporate transparency depends on the aggressiveness of tax avoidance behavior.
- Less aggressive tax avoidance behavior (e.g., investment in municipal bonds, use of net loss carryover or incentive-based management compensation) are usually not sophisticated and thus do not significantly increase agency costs and complexity.
- However, more aggressive tax avoidance behavior (e.g., tax sheltering) are more complex and could lead to more managerial rent extractions, which mitigates the positive effect of cash tax savings.

Hypothesis

- Tax avoidance in the less aggressive continuum increases transparency, but tax avoidance in the more aggressive continuum decreases transparency.

Measures of transparency

List of Studies	Measures of Transparency
Frank et al. (2009)	Financial report aggressiveness, which is performance-matched discretionary accruals. (DFIN)
Kim et al. (2011)	<ol style="list-style-type: none">1. Stock price crash risk. (NCSKEW)2. An indicator variable that takes the value one for a firm-year that experiences one or more firm-specific weekly returns falling 3.2 standard deviations below the mean firm-specific weekly returns over the fiscal year. (CRASH)
Hanlon et al. (2012)	Log of audit fees. (Ln(AUDIT FEE))
Lennox et al. (2013)	Accounting Fraud. (Fraud)
Donohoe and Knechel (2014)	Log of audit fees. (LNFEE)
Balakrishnan et al. (2017)	<ol style="list-style-type: none">1. Absolute analysts' forecast errors. (AFError)2. An estimate of the adverse selection component of the bid-ask spread. (Spread)3. Accruals quality.

Additional measure:

Stock price synchronicity:

The extent to which a firm's stock return is explained by industry and market return

Measures of tax avoidance

GAAP ETR = GAAP effective tax rate. Total income tax (TXT) divided by pre-tax income (PI). All the ETRs used in this paper are set to missing if pretax income is negative or missing. We winsorize all ETRs to [0,1].

Current ETR = Current tax expense (TXT - TXDD) divided by pretax income (PI)

TA GAAP = Negative one multiplied by demeaned *GAAP ETR*.

TA Current = Negative one multiplied by demeaned *Current ETR*.

TA Cash = Negative one multiplied by demeaned *Cash ETR*.

Year	# of <i>GAAP ETR</i>	Mean of <i>GAAP ETR</i>	# of <i>Cash ETR</i>	Mean of <i>Cash ETR</i>	# of <i>Current ETR</i>	Mean of <i>Current ETR</i>
1995	2,637	0.331	2,637	0.308	2,546	0.325
1996	2,757	0.334	2,757	0.291	2,653	0.326
1997	2,821	0.349	2,821	0.294	2,693	0.330
1998	2,688	0.357	2,688	0.318	2,588	0.338

2016	1,340	0.297	1,340	0.258	1,327	0.276
Total	42,840	0.323	42,840	0.271	41,579	0.299

Cash effective tax rates represent actual cash taxes paid.

Table 1 Sample Selection Procedure

Sample Requirement	# of Obs.
Observations of all the US firms from 1995 to 2016 in <i>Compustat_CRSP Merged</i> dataset.	128,211
Delete observations with missing CIK code or Ticker, which are used to merge AuditAnalytics, I/B/E/S, and Thomson-Reuters.	(2,769)
Delete observations of financial and utility firms (i.e., firms with SIC 4900-4999 or 6000-6999).	(41,474)
Delete observations with missing or negative pretax income.	(33,060)
Delete observations with missing data or information to calculate discretionary accrual and other financial variables.	(8,068)
The final sample of firm-year observations for testing the effect of tax avoidance constructed based on GAAP ETR on earnings quality.	42,840

Descriptive Statistics

Variable	# of Obs.	Mean	Std. Dev.	10%	90%
<i>GAAP ETR</i>	42,840	0.323	0.167	0.022	0.430
<i>Cash ETR</i>	42,840	0.271	0.226	0.010	0.513
<i>Current ETR</i>	41,579	0.299	0.211	0.010	0.501
<i>TA GAAP</i>	42,840	-0.323	0.167	-0.430	-0.022
<i>TA Cash</i>	42,840	-0.272	0.226	-0.513	-0.010
<i>TA Current</i>	41,579	-0.299	0.211	-0.500	-0.010
<i>AbsDA</i>	42,840	0.069	0.091	0.007	0.155
<i>StdDA</i>	33,766	0.082	0.088	0.021	0.163
<i>Restate</i>	38,488	0.120	0.325	0	1
<i>AFError</i>	26,691	0.152	0.261	0.010	0.363
<i>AuditFee</i>	28,242	-0.212	1.344	-2.025	1.512
<i>Synch</i>	31,523	-1.359	1.570	-3.460	0.503
<i>Spread</i>	31,632	0.177	0.245	0.013	0.469
<i>Ncskew</i>	30,640	0.032	0.847	-0.922	1.022

Accounting Earnings Attribute Tests

Our first three measures of transparency represent accounting earnings attributes. Specifically, we use the absolute values of discretionary accruals (*AbsDA*) in Model 1, accrual quality (*StdDA*) in Model 2, and the incidence of accounting restatements (*Restate*) in Model 3

$$\begin{aligned} AbsDA = & \alpha_0 + \alpha_1 Tax Avoidance + \alpha_2 Tax Avoidance^2 + \alpha_3 LnTA + \alpha_4 LEV + \alpha_5 ForInc + \alpha_6 PPE + \alpha_7 Intang + \alpha_8 PTROA \\ & + \alpha_9 PTCFO + \alpha_{10} NOL + \alpha_{11} MB + \alpha_{12} BigN + \alpha_{13} TradeVol + \alpha_{14} AnlstCover + Year fixed effect \\ & + Industry fixed effect + \varepsilon \end{aligned}$$

(Model 1)

$$\begin{aligned} StdDA = & \alpha_0 + \alpha_1 Tax Avoidance + \alpha_2 Tax Avoidance^2 + \alpha_3 LnTA + \alpha_4 LEV + \alpha_5 ForInc + \alpha_6 PPE + \alpha_7 Intang + \alpha_8 PTROA \\ & + \alpha_9 PTCFO + \alpha_{10} NOL + \alpha_{11} MB + \alpha_{12} BigN + \alpha_{13} TradeVol + \alpha_{14} AnlstCover + Year fixed effect \\ & + Industry fixed effect + \varepsilon \end{aligned}$$

(Model 2)

$$\begin{aligned} Probit (Restate = 1) \\ = & \alpha_0 + \alpha_1 Tax Avoidance + \alpha_2 Tax Avoidance^2 + \alpha_3 LnTA + \alpha_4 LEV + \alpha_5 ForInc + \alpha_6 PPE + \alpha_7 Intang \\ & + \alpha_8 PTROA + \alpha_9 PTCFO + \alpha_{10} NOL + \alpha_{11} MB + \alpha_{12} BigN + \alpha_{13} TradeVol + \alpha_{14} AnlstCover \\ & + Year fixed effect + Industry fixed effect + e \end{aligned}$$

(Model 3)

Third-Party Reaction Tests

The second set of transparency measures represent the reactions by analysts and auditors.

In Model 4, *AFError* is the absolute difference between median analyst EPS forecasts and actual EPS.

In Model 5, *AuditFee* is the natural log of total audit fees paid by the firm.

$$\begin{aligned} AFError = & \alpha_0 + \alpha_1 Tax Avoidance + \alpha_2 Tax Avoidance^2 + \alpha_3 LnTA + \alpha_4 LEV + \alpha_5 ForInc + \alpha_6 PPE + \alpha_7 Intang + \alpha_8 PTROA \\ & + \alpha_9 TACC + \alpha_{10} Sum_Forecast + \alpha_{11} CashDV + \alpha_{12} TradeVol + \alpha_{13} InstHolding + Year\ fixed\ effect \\ & + Industry\ fixed\ effect + \varepsilon \end{aligned}$$

(Model 4)

$$\begin{aligned} AuditFee = & \alpha_0 + \alpha_1 Tax Avoidance + \alpha_2 Tax Avoidance^2 + \alpha_3 LnTA + \alpha_4 LEV + \alpha_5 ForInc + \alpha_6 PPE + \alpha_7 Intang + \alpha_8 PTROA \\ & + \alpha_9 TACC + \alpha_{10} BigN + \alpha_{11} AccRec + \alpha_{12} MAO + \alpha_{13} Tenure + Year\ fixed\ effect + Industry\ fixed\ effect + \varepsilon \end{aligned}$$

(Model 5)

Stock Price Behavior Tests

In the third set of empirical tests, we use stock price synchronicity (*Synch*), bid-ask spread (*Spread*), and stock price crash risk (*Ncskew*) as dependent variables in Models 6 to 8.

$$\begin{aligned} \text{Synch} = & \alpha_0 + \alpha_1 \text{Tax Avoidance} + \alpha_2 \text{Tax Avoidance}^2 + \alpha_3 \text{LnTA} + \alpha_4 \text{LEV} + \alpha_5 \text{ForInc} + \alpha_6 \text{PPE} + \alpha_7 \text{Intang} + \alpha_8 \text{PTROA} \\ & + \alpha_9 \text{TACC} + \alpha_{10} \text{AnlstCover} + \alpha_{11} \text{InstHolding} + \alpha_{12} \text{Price} + \text{Year fixed effect} + \text{Industry fixed effect} + \varepsilon \end{aligned}$$

(Model 6)

$$\begin{aligned} \text{Spread} = & \alpha_0 + \alpha_1 \text{Tax Avoidance} + \alpha_2 \text{Tax Avoidance}^2 + \alpha_3 \text{LnTA} + \alpha_4 \text{LEV} + \alpha_5 \text{ForInc} + \alpha_6 \text{PPE} + \alpha_7 \text{Intang} + \alpha_8 \text{PTROA} \\ & + \alpha_9 \text{TACC} + \alpha_{10} \text{AnlstCover} + \alpha_{11} \text{InstHolding} + \alpha_{12} \text{Price} + \alpha_{13} \text{TradeVol} + \text{Year fixed effect} \\ & + \text{Industry fixed effect} + \varepsilon \end{aligned}$$

(Model 7)

$$\begin{aligned} \text{Ncskew}_{it+1} = & \alpha_0 + \alpha_1 \text{Tax Avoidance} + \alpha_2 \text{Tax Avoidance}^2 + \alpha_3 \text{LnTA} + \alpha_4 \text{LEV} + \alpha_5 \text{ForInc} + \alpha_6 \text{PPE} + \alpha_7 \text{Intang} \\ & + \alpha_8 \text{PTROA} + \alpha_9 \text{TACC} + \alpha_{10} \text{AnlstCover} + \alpha_{11} \text{InstHolding} + \alpha_{12} \text{Price} + \alpha_{13} \text{d_Turn} + \alpha_{14} \text{Ret} + \alpha_{15} \text{Ncskew}_{it} \\ & + \text{Year fixed effect} + \text{Industry fixed effect} + \varepsilon \end{aligned}$$

(Model 8)

Table 3 Effect of Tax Avoidance on Absolute Accruals Management, Earnings Opacity, and Restatement

Dependent Variable=	(1) <i>AbsDA</i>	(2) <i>AbsDA</i>	(3) <i>AbsDA</i>	(4) <i>AbsDA</i>	(5) <i>StdDA</i>	(6) <i>StdDA</i>	(7) <i>StdDA</i>	(8) <i>StdDA</i>	(9) <i>Restate</i>	(10) <i>Restate</i>	(11) <i>Restate</i>	(12) <i>Restate</i>
<i>TA GAAP</i>	0.025*** (7.34)	0.160*** (19.88)			0.030*** (7.43)	0.142*** (13.55)			-0.016* (-1.65)	0.043* (1.67)		
<i>TA GAAP</i> ²		0.179*** (20.07)				0.144*** (13.06)				0.074*** (2.66)		
<i>TA Cash</i>			0.084*** (13.20)				0.108*** (13.15)				0.078*** (3.17)	
<i>TA Cash</i> ²			0.112*** (16.29)				0.113*** (13.77)				0.109*** (4.44)	
<i>TA Current</i>				0.103*** (14.63)				0.134*** (13.43)				0.064** (2.51)
<i>TA Current</i> ²				0.135*** (17.27)				0.135*** (13.62)				0.098** (3.84)
<i>Controls</i>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>Industry effect</i>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>Year effect</i>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>ETRs at the Inflection point</i>		0.447	0.375	0.381		0.493	0.478	0.496		0.291	0.358	0.327
<i>Percentage of observations with ETRs > Inflection point</i>		9.1%	24.7%	27.7%		6.3%	11.5%	10.4%		72.5%	27.1%	44.1%
<i>N</i>	42,840	42,840	42,840	41,579	33,766	33,766	33,766	32,840	38,488	38,488	38,488	37,286
<i>R</i> ²	0.220	0.234	0.227	0.222	0.220	0.229	0.226	0.229	0.080	0.081	0.082	0.083

Figure 1: Relationship between Transparency and Tax avoidance

Panel A: Effect on Absolute Discretionary Accruals, Standard Deviation of Discretionary Accruals, and the probability of Restatement

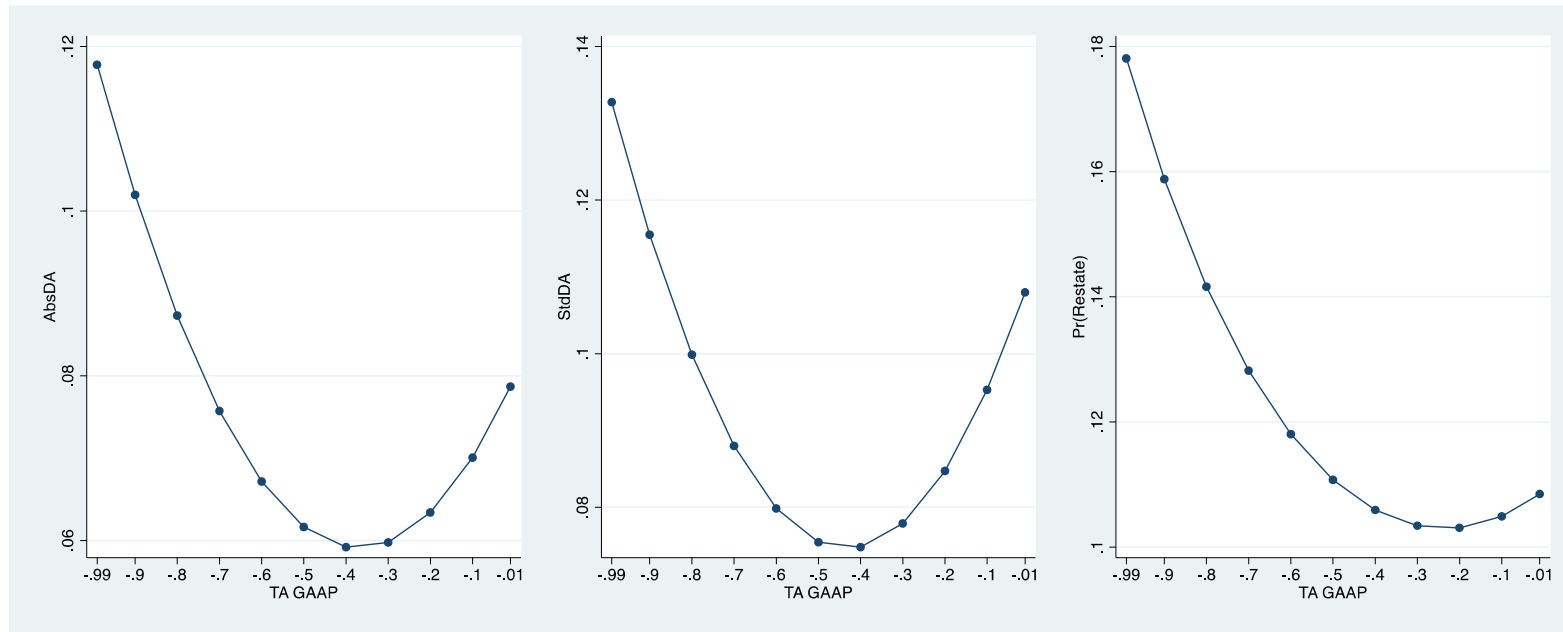


Table 4 Effect of Tax Avoidance on Analysts Forecast Errors and Audit Fees

Dependent Variable=	(1) <i>AFError</i>	(2) <i>AFError</i>	(3) <i>AFError</i>	(4) <i>AFError</i>	(5) <i>AuditFee</i>	(6) <i>AuditFee</i>	(7) <i>AuditFee</i>	(8) <i>AuditFee</i>
<i>TA GAAP</i>	0.030** (2.00)	0.403*** (10.66)			0.049* (1.67)	0.626*** (8.51)		
<i>TA GAAP</i> ²		0.469*** (11.34)				0.743*** (9.67)		
<i>TA Cash</i>			0.263*** (8.57)				-0.049 (-0.75)	
<i>TA Cash</i> ²			0.405*** (11.91)				0.107 (1.63)	
<i>TA Current</i>				0.315*** (9.19)				0.119* (1.70)
<i>TA Current</i> ²				0.407*** (11.06)				0.259*** (3.65)
<i>Controls</i>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>Industry effect</i>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>Year effect</i>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>ETRs at Inflection point</i>		0.428	0.325	0.387		0.421	N/A	0.230
<i>Percentage of observations with ETRs > Inflection point</i>		10.3%	35.5%	24.3%		10.2%	N/A	60.4%
<i>N</i>	26,691	26,691	26,077	26,036	28,242	28,242	27,453	27,433
<i>R</i> ²	0.081	0.091	0.099	0.093	0.824	0.826	0.825	0.825

Panel B: Effect on Analysts Forecast Errors and Audit Fees

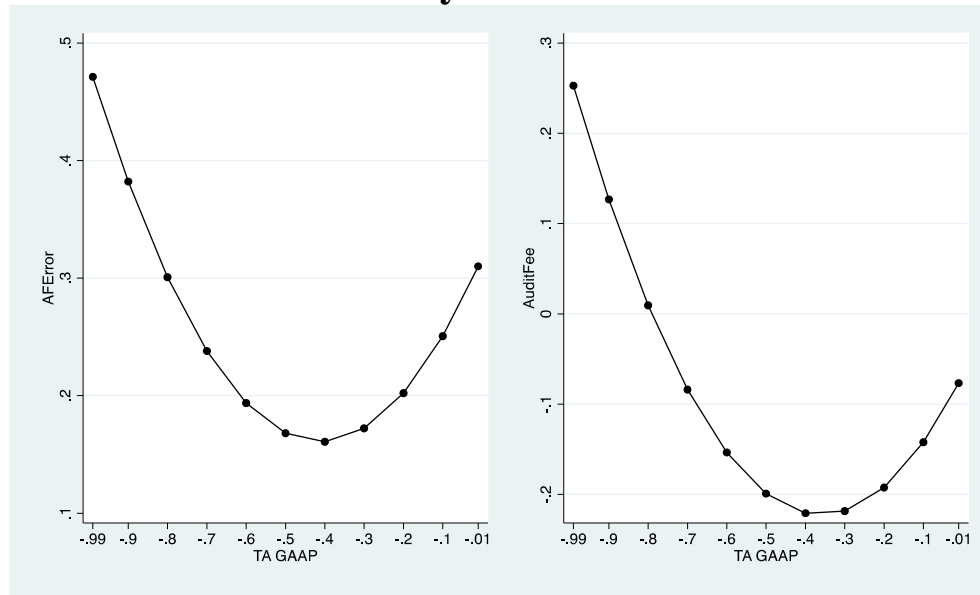
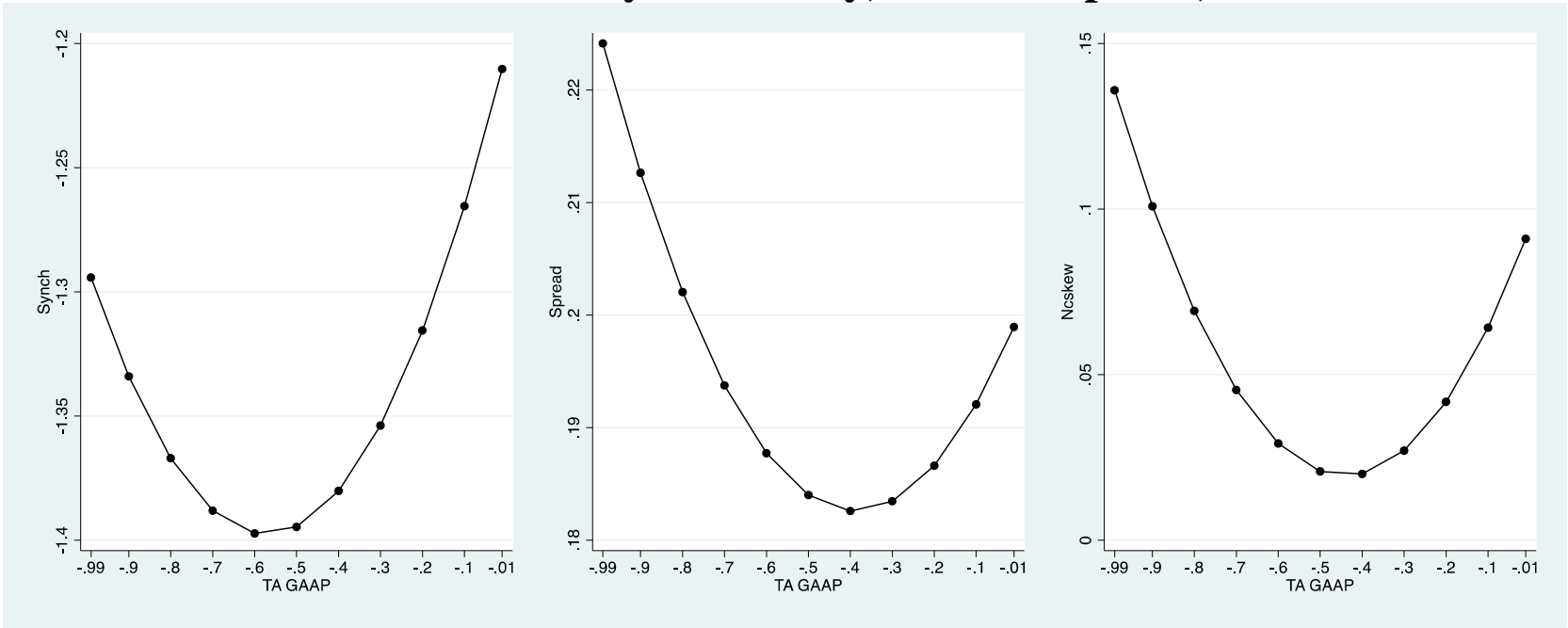


Table 5 Effect of Tax Avoidance on Stock Price Behavior

Dependent Variable=	(1) <i>Synch</i>	(2) <i>Synch</i>	(3) <i>Synch</i>	(4) <i>Synch</i>	(5) <i>Spread</i>	(6) <i>Spread</i>	(7) <i>Spread</i>	(8) <i>Spread</i>	(9) <i>Ncskew_{t+1}</i>	(10) <i>Ncskew_{t+1}</i>	(11) <i>Ncskew_{t+1}</i>	(12) <i>Ncskew_{t+1}</i>
<i>TA GAAP</i>	0.142*** (3.07)	0.487*** (4.53)			0.006 (0.72)	0.079*** (3.75)			0.061* (1.85)	0.268*** (3.77)		
<i>TA GAAP</i> ²		0.449*** (3.89)				0.098*** (4.62)				0.270*** (3.26)		
<i>TA Cash</i>			0.283*** (3.00)				0.054*** (2.95)				0.235*** (3.72)	
<i>TA Cash</i> ²			0.301*** (3.04)				0.063*** (3.45)				0.242*** (3.06)	
<i>TA Current</i>				0.138 (1.39)				0.070*** (3.75)				0.289*** (4.43)
<i>TA Current</i> ²				0.202* (1.93)				0.076*** (4.04)				0.296*** (3.81)
<i>Controls</i>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>Industry effect</i>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>Year effect</i>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>ETRs at Inflection point</i>		0.542	0.470	0.342		0.403	0.429	0.461		0.496	0.485	0.488
<i>Percentage of observations with ETRs > Inflection point</i>		5.1%	11.4%	37.8%		14.4%	14.7%	12.1%		6.2%	10.6%	10.1%
<i>N</i>	31,523	31,523	30,683	30,691	31,632	31,632	30,790	30,796	30,640	30,640	29,815	29,814
<i>R</i> ²	0.538	0.539	0.538	0.539	0.576	0.576	0.578	0.577	0.036	0.037	0.036	0.037

Panel C: Effect on Stock Price Synchronicity, Bid-Ask Spread, And Stock Price Crash Risk



Panel D: Change Analyses

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	$\Delta AbsDA$	ΔAQ	$\Delta Restate$	$\Delta AFError$	$\Delta AuditFee$	$\Delta Synch$	$\Delta Spread$	$\Delta FNcskew$
$\Delta TA GAAP$	0.046*** (6.84)	0.005** (2.03)	0.057*** (3.67)	0.122*** (4.94)	0.095*** (3.35)	-0.131 (-1.33)	-0.005 (-0.88)	-0.063 (-0.82)
$TA GAAP$	0.011*** (3.53)	0.002 (1.40)	-0.003 (-0.21)	0.003 (0.30)	-0.062*** (-3.73)	0.033 (0.69)	0.013*** (3.23)	0.114*** (2.69)
$\Delta TA GAAP * TA GAAP$	0.102*** (8.79)	0.015*** (3.13)	0.113*** (4.02)	0.284*** (5.92)	0.122** (2.11)	-0.143 (-0.78)	0.004 (0.31)	-0.086 (-0.59)
<i>Control Variables</i>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>Year effect</i>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
$\Delta TAGAAP -$								
$\Delta TAGAAP * TAGAA$	-0.056	-0.010	-0.056	-0.162	-0.027	0.012	-0.009	0.023
<i>F-test</i>	43.00***	8.75***	7.51***	21.17***	1.98	0.00	1.27	0.04
<i>N</i>	34,596	26,125	30,952	21,536	21,448	26,047	26,141	25,268
<i>R</i> ²	0.073	0.029	0.0541	0.025	0.189	0.100	0.087	0.245

Panel E: The Effect of Tax Avoidance on Transparency of year t+1

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	$AbsDA_{t+1}$	$StdDA_{t+1}$	$Restate_{t+1}$	$AFError_{t+1}$	$AuditFee_{t+1}$	$Synch_{t+1}$	$Spread_{t+1}$
$TA GAAP$	0.078*** (9.15)	0.151*** (12.23)	0.052* (1.67)	0.279*** (5.24)	0.507*** (5.88)	0.941*** (7.48)	0.084*** (3.36)
$TA GAAP^2$	0.066*** (7.27)	0.151*** (11.54)	0.060* (1.65)	0.313*** (4.98)	0.645*** (6.92)	0.920*** (6.57)	0.094*** (3.85)
<i>Control Variables</i>	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>Year effect</i>	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>Industry effect</i>	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>N</i>	32,679	27,841	30,539	21,078	21,712	25,376	25,420
<i>R</i> ²	0.137	0.224	0.064	0.083	0.822	0.541	0.570

Conclusion

- Using a large sample of US firms from 1995 to 2016, we find a significant non-linear effect of tax avoidance on transparency. That is, when a firm's tax avoidance is low, an increase in tax avoidance improves transparency; however, when a firm's tax avoidance is high, an increase in tax avoidance decreases transparency.
- Overall, our study supports the idea that tax avoidance has implications for analyzing corporate transparency. However, the direction of the transparency effect of tax avoidance depends on the aggressiveness of the tax avoidance behavior.

- Thank you!