

The Effect of CAP on Tax Aggressiveness

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1. Introduction

The compliance assurance process (CAP) is an IRS initiative designed to resolve the uncertain tax positions of large corporations prior to their filing a tax return for the year in question. The Government Accountability Office (GAO, 2013) recommended that the IRS measure the effectiveness of the CAP program by developing performance measures and targets related to seven CAP goals, including ensuring taxpayer compliance. This research examines whether firms selected for the CAP program are less tax aggressive than a matched sample of non-CAP firms. We then examine whether firms become less aggressive after they enter the CAP program. To address these questions, we use several measures of tax aggressiveness previously developed in the literature.

Tax aggressiveness has been studied extensively in the literature, but to date, the variation in effective tax rates (ETRs) is not well understood (Hanlon and Heitzman, 2010). Weisbach (2002) goes so far as to question why firms do not use more tax shelters—the “undersheltering puzzle.” Possible reasons why some firms are less aggressive include tax manager risk aversion, firm focus on business operations, political costs, or that the firm practices high ethical standards and does not engage in questionable activities—including tax aggressiveness. Firms with these characteristics are likely the firms that the IRS is looking for when evaluating applications for CAP. Thus, we expect to find that CAP firms are less tax aggressive than non-CAP firms.

Firms that desire certainty and want to minimize tax audit costs are likely candidates to enter CAP. DeSimone, Sansing and Seidman (2013) find that the perceived probability of detection for uncertain tax positions may be a determining factor for CAP participation. Firms that take highly aggressive positions are less likely to enter CAP because of the full transparency requirement if they believe that the IRS will detect undisclosed uncertain tax positions. In the study most closely related to ours, Beck and Lisowsky (2013) find that firms with moderate-sized FIN 48 reserves¹ are the most likely to participate in CAP. They interpret these results to suggest that CAP participation is negatively related to tax aggressiveness, but positively related to tax uncertainty. In other words, firms with no FIN 48 reserves would gain little certainty by entering CAP, while highly tax aggressive firms are likely to avoid CAP to avoid disclosure of weak positions.

We extend these previous studies by analyzing whether the IRS selects firms that are not tax aggressive to participate in CAP (tax angels) and/or if firms become less tax aggressive after joining the CAP program. The IRS CAP program is a voluntary program in which participating large corporations work collaboratively with the IRS to identify and resolve tax issues in real time before the annual tax return is filed. The traditional post-filing audits for large corporations takes on average 50 months to complete from the time the return is filed to audit closing, not including the appeals process (GAO 2013, 7). To gain audit currency,² the IRS started CAP in March 2005 as a pilot program and made CAP permanent in March 2011.³

The program is designed to be mutually beneficial to both taxpayers and the IRS. A CAP firm benefits from U.S. federal income tax audit currency and certainty. Before a firm is accepted into CAP, prior year audits are closed, resulting in audit currency for the firm. Once in CAP, a firm is able to achieve certainty on the final determination of current

¹ Financial Accounting Standards Board (FASB) Interpretation No. 48, Accounting for Uncertainty in Income Tax Positions—An Interpretation of FASB Statement No. 109 (FIN 48), effective for tax years beginning after December 15, 2006, clarified the accounting for uncertainty in income taxes recognized in a company's financial statements in accordance with FASB Statement No. 109, Accounting for Income Taxes (FAS 109). FAS 109 and FIN 48 are a part of U.S. generally accepted accounting principles (U.S. GAAP), and thus are now part of the FASB Accounting Standards Codification (ASC), which is effective for interim and annual periods ending after September 15, 2009. FASB ASC Topic 740, Income Taxes, provides the income tax guidance that was provided in FAS 109 and FIN 48, as well as other accounting pronouncements. FASB Subtopic 740-10 includes the provisions that comprised FIN 48.

² Currency means “the appropriate documents and corporate staff knowledgeable about a particular transaction are more likely to be available for consultation” (GAO 2013, 14).

³ In March 2011, the IRS announced that the CAP would be expanded and made permanent. Interested taxpayers can now download the CAP application from the IRS website.

U.S. tax liability by settling most material tax issues before filing; post-filing examinations are eliminated or minimized. The IRS benefits by reducing examination cycle times, thus freeing resources to increase audit coverage among other taxpayers.

The GAO (2013) recommended that the IRS measure the effectiveness of the CAP program by developing performance measures and targets related to seven CAP goals: ensure taxpayer compliance; reduce overall examination time; increase currency for taxpayers; enhance the accurate, efficient, and timely resolution of complex tax issues; increase audit coverage by providing more efficient use of resources; reduce taxpayer administrative burden; and increase certainty for taxpayers. This research can help the IRS measure the effectiveness of the CAP program with respect to the goal of ensuring taxpayer compliance.

We compare CAP firms with a matched sample of non-CAP firms, considering both firm characteristics potentially associated with tax aggressiveness (such as size and foreign operations) and tax aggressiveness measures (such as unrecognized tax benefits (UTBs)).⁴ We find some evidence that CAP firms are less tax aggressive than the matched firms, but in general our results are weak. Consistent with the “angel” hypothesis, we find that CAP firms have lower UTBs. In addition, CAP firms have higher foreign tax rates. This result, combined with the fact that R&D is associated with lower foreign tax rates, but higher federal tax rates, suggests that CAP firms are less aggressive income shifters and likely have less intangible property offshore.

GAO noted that IRS and non-IRS officials indicated that compliance may be higher under CAP, motivated in part by the corporation’s desire not to be removed from CAP. Thus, if the “angel” scenario is not descriptive pre-CAP, the CAP firms may become less tax aggressive in subsequent years. We conduct a within-CAP-firm analysis to examine pre- and post-CAP tax aggressiveness by examining UTB balances and the amount of the UTB that would affect the ETR if reversed. There is not a significant difference for the UTB measures from 2007-2009, likely because there were fewer active CAP firms in those years. As the number of firms in the CAP program increase over the years, these measures become lower in 2010 and 2011 for the CAP firms, suggesting that CAP firms become less tax aggressive once in the CAP program.

This paper reviews the CAP background in Section 2. Section 3 discusses firm characteristics associated with tax aggressiveness and Section 4 describes the tax aggressiveness measures. The samples are described in Section 5. Sections 6 and 7 report the descriptive statistics and results from the across-firm and within-firm analyses respectively. Section 8 concludes.

2. CAP Background

The CAP program began in 2005 with 16 firms, and by the end of 2011 there were 160 firms that had participated in CAP. Beginning in 2012, the CAP program moved from an invitation-only program to an application program. The IRS required applicants to have assets greater than \$10 million, have audited financial statements, not be in litigation with the IRS or any federal or state agency, and display a general willingness to be transparent and cooperative with the IRS. After the taxpayer completes the application, but before the taxpayer is accepted into the program, the taxpayer must sign a Memo of Understanding (MOU). The MOU represents a commitment by both the IRS and the taxpayer to the CAP program. In general, the MOU outlines the specific objectives of the review, identifies the audit timeframe, defines the roles and responsibilities of both parties and establishes disclosure guidelines for tax positions. Taxpayers who fail to comply with the requirements set forth in the MOU may be asked to leave the program.

The MOU also identifies the taxpayer’s assigned Account Coordinator (AC). Throughout the process, the AC identifies potentially uncertain issues by reviewing the taxpayer’s tax audit history, prior tax issues, financial performance, industry trends, and current business practices. As the issues are resolved throughout the tax year, the AC and the taxpayer enter into Issue Resolution Agreements (IRAs). At the close of tax year, the AC and the taxpayer incorporate the agreed tax treatment for the issues identified in the IRAs in the closing agreements (Form 906). If all the issues are resolved, then IRS will issue a “full acceptance letter,” stating that it will accept the taxpayer’s return, subject to a post-filing review if it is filed consistent with the closing agreement. If there are any open or unresolved issues, the IRS will issue a “partial acceptance letter,” which accepts the taxpayer’s return as it relates to the agreed upon transactions, but requires any unresolved issues to be resolved under the traditional audit process.

⁴ The purpose of the matched sample is to control for selection bias. An alternative to this would be to use a 2-stage model where the first stage is designed to model the selection into CAP and the inverse Mills ratio resulting from this first stage is used in a second stage model.

Once the return is filed, the taxpayer is subject to a post-filing review by the IRS to ensure that all issues were reported as originally agreed upon. The post-file review is typically completed within 90 days of filing. If the issues remain unchanged and are reported as agreed, the IRS issues a “no change letter” and the case is closed. If new issues are identified or unresolved, then the IRS conducts an issue focused examination. Under this circumstance, the case may be closed “agreed with changes” in which unresolved issues are agreed upon and resolved, or the case may be closed “unagreed” in which the taxpayer is afforded full access to appeals proceedings similar to the traditional process.

3. Firm Characteristics Associated with Tax Aggressiveness

The GAO recommended that tax compliance be ensured for companies in the CAP program; however, tax compliance is difficult to measure using observable data. Firms take tax positions on hundreds of items each year with varying degrees of uncertainty. Due to the difficulty of measuring tax compliance, we examine its counterpart - tax aggressiveness. Researchers have extensively examined tax aggressiveness; thus, we use several well accepted measures of tax aggressiveness as well as some measures we develop for this study.

Prior to 2012, the IRS invited firms to enter the CAP program presumably based on an informal assessment of the firm’s compliance profiles. We examine 10 firm characteristics that may be associated with tax aggressiveness to determine if CAP taxpayers could be distinguished on the basis of these characteristics. Table 1, Panel B, provides definitions of these firm characteristic measures, which are determined using Compustat data. Beginning with *Size*, the relation between size and aggressive tax planning, though studied extensively, is unclear. Larger firms may have greater resources and opportunities to engage in aggressive tax planning; however, larger firms may also face greater political costs (Zimmerman, 1983). Rego (2003) finds that larger firms have higher worldwide book effective tax rates, consistent with the political cost argument. Wilson (2009), however, finds a positive association between tax shelter participation and firm size, suggesting that larger firms are more tax aggressive. To explore this relation, we construct a measure *Size* as the natural log of total assets.

Rego (2003) finds that multinational firms with more extensive foreign operations have lower effective tax rates and concludes that these results are consistent with economies of scale for tax planning. Wilson (2009) and Lisowsky (2010) also provide evidence that the presence of foreign operations is associated with their measures of tax aggressiveness. To capture these effects, we measure *Foreign* as the ratio of total foreign pretax income to total worldwide pretax income.

Profitable firms arguably have a greater incentive to reduce taxes relative to firms that are not profitable. We use two measures of profitability: cash flow from operations (*CFO*) and return on assets (*ROA*). Conversely, firms with net operating losses have less incentive to be tax aggressive. We use *NOL*, which is a binary variable equal to one if the firm has a tax net operating loss carryforward at the end of the year and zero otherwise.

Mills *et al.* (1998) argue that leverage proxies for the complexity of firms’ financial transactions, so firms with higher leverage could have the ability to minimize taxes through financing transactions. Alternatively, firms with higher leverage may have less need for other non-debt tax shields and thus engage in less tax aggressive behavior (Graham and Tucker, 2006). We measure *Leverage* as the ratio of long term debt to total assets.

Phillips (2003) concludes that firms with growth opportunities also have more tax planning opportunities. We include two measures that proxy for a firm’s growth opportunities, the market-to-book ratio, *MTB*, and research and development expense, *RD*.

Similar to capital structure, although depreciation is a non-debt tax shield, capital intensity leads to increases in overall tax planning opportunities. We include a measure of a firm’s investment in fixed assets, *CAPINT*. Similarly, because investments in intangible assets present additional opportunities for tax planning through transfer pricing, we include *INTAN*, as a measure of a firm’s intangibles. *RD* is also a proxy for intangible assets.

4. Tax Aggressiveness Measures

In this section, we discuss eight tax aggressiveness proxies commonly used in the literature as well as three measures that we develop for this study. We use all of these measures because all of them have measurement error. Table 1, Panel A, provides definitions of these tax aggressiveness measures: *ETR*, *CETR*, *CashETR*, *LRCashETR*, *BTD*, *PBTD*, *UTB*, *UTB_ETR*, *TXWW_ETR*, *TXFED_ETR* and *TXFO_ETR*. We use Compustat data for the tax rate and book-tax difference measures. We use Compustat and IRS data for the UTB measures, resolving any differences by examining the financial disclosures. The IRS UTB data are described in the Appendix.

TABLE 1. Variable Descriptions

Variable Name	Definition*
Panel A: Tax Aggressiveness Variables	
ETR	The book effective tax rate calculated as total expense (<i>TXT</i>) in year <i>t</i> divided by pretax book income (<i>PI</i>) in year <i>t</i>
CETR	The current book effective tax rate calculated as current tax expense (<i>TXC</i>) in year <i>t</i> divided by pretax book income (<i>PI</i>) in year <i>t</i>
CashETR	The cash effective tax rate calculated as cash taxes paid (<i>TXPD</i>) in year <i>t</i> divided by pretax book income in year <i>t</i> (<i>PI</i>) less special items (<i>SPI</i>)
LRCashETR	The 5-year average cash effective tax rate calculated as the five-year sum of cash taxes paid (<i>TXPD</i>) divided by the fiveyear sum of pretax book income (<i>PI</i>) less special items (<i>SPI</i>)
BTD	Total book tax differences computed as the difference between book income (<i>PI</i>) less minority interest (<i>MII</i>) and an estimate of taxable income. Taxable income is estimated by grossing up the sum of federal tax expense (<i>TXFED</i>) and foreign tax expense (<i>TXFO</i>) by the statutory rate and then subtracting the change in the net operating loss (<i>TCLF</i>) from year <i>t-1</i> to year <i>t</i> . BTD is scaled by beginning of the year total assets (<i>AT</i>)
PBTD	Permanent book tax differences computed as the difference between total book tax differences (<i>BTD</i>) and temporary book tax differences [Computed by grossing up deferred tax expense (<i>DTE</i>) by the statutory rate]
UTB & UTB_ETR	UTB end of year and UTB-ETR as reported in financial statement footnotes pursuant to Financial Interpretation No. 48 (FIN 48 is now codified as part of ASC 740), in \$millions. (Source: IRS, 10-Ks). Both are scaled by beginning of the year total assets (<i>AT</i>)
TXWW_ETR	The current tax effective tax rate calculated as <i>TXWW</i> in year <i>t</i> divided by pretax book income (<i>PI</i>) in year <i>t</i> ; <i>TXWW</i> = current federal tax expense (<i>TXFED</i>) + current foreign tax expense (<i>TXFO</i>)
TXFED_ETR	The current domestic effective tax rate calculated as current federal tax expense (<i>TXFED</i>) in year <i>t</i> divided by pretax domestic book income (<i>PIDOM</i>) in year <i>t</i>
TXFO_ETR	The current foreign effective tax rate calculated as current foreign tax expense (<i>TXFO</i>) in year <i>t</i> divided by pretax foreign book income (<i>PIFO</i>) in year <i>t</i>
Panel B: Firm Characteristic Variables	
Size	Log of total assets in year <i>t</i> (<i>AT</i>)
Foreign	Ratio of foreign pretax income (<i>PIFO</i>) to total worldwide pretax income in year <i>t</i> (<i>PI</i>)
CFO	Operating cash flows in year <i>t</i> (<i>OANCF</i>) scaled by total assets in year <i>t</i> (<i>AT</i>)
ROA	Pretax income in year <i>t</i> (<i>PI</i>) divided by total assets in year <i>t</i> (<i>AT</i>); winsorized at [-1, 1]
NOL	An indicator variable equal to 1 if the firm has a tax loss carryforward in year <i>t</i> (<i>TLCF</i>) and 0 otherwise
Leverage	Long term debt (<i>DLTT</i>) scaled by total assets in year <i>t</i> (<i>AT</i>)
MTB	Ratio of market value of common equity (<i>PRCC_F*CSHO</i>) to book value of common equity in year <i>t</i> (<i>CEQ</i>)
RD	Total research and development expense in year <i>t</i> (<i>XRD</i>) scaled by total assets at the beginning of the year (<i>AT</i>)
CAPINT	Total gross property, plant and equipment in year <i>t</i> (<i>PPEGT</i>) scaled by total assets
INTAN	Goodwill and other intangibles in year <i>t</i> (<i>INTAN</i>) scaled by total assets at the beginning of the year (<i>AT</i>)

* Compustat variable names are reported in parentheses.

4.1 ETR and CETR

A firm's effective tax rate (*ETR*), defined as some measure of tax liability divided by income, has long been used in the literature as a measure of tax aggressiveness. We define *ETR* as total book tax expense divided by pretax income. Similarly, the current book effective tax rate (*CETR*) uses the current book tax expense in the numerator.

The *ETR*-based measures have two limitations with respect to measuring tax aggressiveness. First, because total tax expense is comprised of current and deferred taxes, the *ETR* fails to account for tax aggressiveness associated with temporary book-tax differences because decreases in current tax expense are offset by corresponding increases in

deferred tax expense. Second, both the ETR and CETR understate a firm's level of tax aggressiveness if the firm records unrecognized tax benefits associated with aggressive tax positions, increasing a tax contingency reserve instead of reducing tax expense.⁵

4.2 *CashETR and LRCashETR*

CashETR, calculated as cash taxes paid divided by pretax income, will reflect the benefits of aggressive tax planning because cash taxes is based on the actual tax outlays. This measure, however, may not be as useful as the *ETR* and *CETR* to the extent that prior years' taxes are being paid in the current year. Dyreng *et al.* (2008) introduce the long-run cash effective tax rate (*LRCashETR*), calculated as ten-year sum of cash taxes divided by the 10-year sum of pretax financial income. We use a five-year sum to avoid losing observations, similar to Rego and Wilson (2012) and Frischmann *et al.* (2008).

4.3 *BTD and PBTB*

The total difference between book and taxable income (*BTD*) can also be used as a proxy for tax aggressiveness. Computing *BTD* requires estimating taxable income, which is typically done by grossing up current tax expense by the statutory tax rate. Empirically, Wilson (2009) finds that *BTD* is positively associated with a measure of tax sheltering.

Several other studies employ variants of book-tax differences as the proxy for tax aggressiveness. Rego and Wilson (2012) use permanent book-tax differences as their proxy, based on the assumption that managers prefer tax strategies that permanently reduce income tax expense rather than just deferring the cash outlay. While tax strategies that generate temporary book-tax differences could lead to lower current tax expense, such differences also lead to a corresponding increase in deferred tax expense, resulting in no change to total tax expense. They compute *PBTB* as total book-tax differences minus deferred tax expense grossed up by the applicable federal statutory rate.

4.4 *UTB and UTB-ETR*

We also use *UTB* and *UTB-ETR* as measures of tax aggressiveness. The *UTBs* resulting from uncertain tax positions were first disclosed in tax footnotes for years beginning after December 15, 2006, FIN 48 (now included as part of FASB ASC 740) requires that corporations disclose the unrecognized tax balances in their financial statement footnotes. Under FIN 48's two-step process, the firm records a reserve only if it is more likely than not that the issue will not be sustained. CAP taxpayers most likely meet that threshold. In the second step, the firm estimates the tax benefit that will be recognized, which may be different from the tax benefit claimed on the tax return. Thus, a firm's *UTBs* represent the difference between the tax positions taken or expected to be taken in tax returns and the benefits recognized in the corresponding financial statements pursuant to ASC 740. In particular, ASC 740-10-50-15 and 15A require public entities to disclose: (1) a tabular reconciliation of the total *UTBs* at the beginning and end of the period;⁶ and (2) the total *UTBs* that, if recognized, would affect the effective tax rate.

4.5 *TXWW-ETR, TXFED-ETR and TXFO-ETR*

Finally we focus on domestic versus foreign tax rates, using *TXFED*, *TXFO*, and *TXWW* (*TXFED* + *TXFO*) and their related tax base, *PIDOM*, *PIFO*, and *PI*, to compute *TXFED_ETR*, *TXFO_ETR*, and *TXWW_ETR*. *TXFED* is the current U.S. federal tax imposed on worldwide income. Firms that are tax aggressive likely shift income out of the U.S. into foreign jurisdictions. These firms may report higher federal tax rates *TXFED-ETR* as their benefit from U.S. tax incentives such as the R&D credit or the deduction for domestic production activities is reduced. These firms also likely report lower current foreign tax rates *TXFO-ETR* because they would likely report this shifted income in tax havens. *TXWW-ETR* is the federal and foreign current tax rates. This rate excludes state taxes because income shifting strategies out of the U.S. likely have little effect on the state income tax rate.

⁵ The corporation credits the tax reserve instead of tax expense.

⁶ The tabular reconciliations disclose "gross" *UTBs*, including the amount recorded as the liability for *UTBs* (the tax contingency reserve), amounts recorded as a reduction in a deferred tax asset (DTA) or an increase in a deferred tax liability (DTL), and amounts recorded as components of other equity or net asset amounts in the balance sheet. The *UTBs* are not reduced by the potential indirect effects of offsets in other tax jurisdictions, although some firms report *UTBs* with and without such indirect effects.

5. Samples: CAP and Non-CAP

5.1. CAP Sample

The IRS CAP program began with 16 taxpayers in 2005 and expanded to 140 taxpayers by 2011. From 2005 through 2011, 160 firms have been a part of the CAP program. Identifying the “year” for sample purposes was problematic because IRS classifies the CAP year differently from Compustat, our source of financial data. In addition, the IRS year classification was not consistent during our sample period. In an effort to create a consistent CAP year convention, beginning in 2012, the CAP year for IRS reporting purposes will be determined by the year of the first day of the firm’s fiscal year. For example, a new CAP firm with fiscal year end of November 2012 would be classified as a 2011 firm because the first day of the fiscal year was in 2011.

Prior to the new CAP year rule, the IRS typically followed the rule that firms with fiscal years ending in January through June were classified by the prior calendar year and firms with fiscal years ending in July through December used the current year.⁷ Because we use Compustat data, we follow the Compustat convention that accounting periods ending in January through May are classified as the prior year, and periods ending in June through December retain the current year; we use the term *fyear* to describe the Compustat convention. Thus, firms with accounting periods ending in June will have a CAP year that is one year behind the *fyear*. For example, IRS statistics show that in the inaugural CAP year, 2005, 17 firms accepted the IRS invitation to join CAP. Following the *fyear* convention, 16 firms are 2005 firms, and 1 is a 2006 firm.

Table 2, Panel A, shows the CAP firms (public and private) by IRS CAP year. The panel shows the year when the 160 public and private firms that have been a part of CAP during 2005–2011 entered and left the CAP program. For example, in Panel A, of the 16 firms that entered in 2005, 5 ultimately left the CAP program: 2 left in 2006, 1 in 2008, and 2 in 2009. Moving to 2009, there were 94 firms at the beginning of the year and 16 firms joined CAP. All 16 firms were still in CAP in 2011. Of the 160 firms, 140 were in the program in 2011. Of the 20 firms that have left, 10 firms are public firms that continue to exist.

Table 2, Panel B, shows the CAP sample determination. We eliminate 10 private firms, 12 subsidiaries, 3 foreign firms, 1 firm that changed fiscal year end, 5 firms that were acquired in 2012, 1 firm that was not covered by Compustat prior to 2011, 1 bankrupt firm, and finally 2 firms for which we are unable to determine the status. The final CAP sample consists of 105 firms that were in the sample at the end of *fyear* 2012. The sample has 640 firm-years.

The *fyear* columns show the number of sample firms in the CAP sample in each year. For example, of the 110 firms (5 firms were acquired in 2012), 42 were active in the CAP program in 2007, 66 in 2008, 79 in 2009, 86 in 2010, and 108 in 2011. The CAP sample includes 486 active CAP firm-years.

5.2 Non-CAP Sample

The IRS provided the employer identification numbers (EINs) for 286 non-CAP firms that the IRS matched to the CAP firms based on income, assets, and debt equity ratio, using tax return data. The matched sample included private firms, but for our research, we use only the public firms, which we identified as public using information from the Schedule M-3, Part I, which was provided by IRS.⁸

Table 3 shows the non-CAP sample determination. We dropped 4 firms that were previously CAP taxpayers, 25 private firms, 42 subsidiaries, 3 foreign firms, 1 firm that changed fiscal year end, 1 bankrupt firm, and finally 22 firms for which we are unable to determine the status. Finally, we dropped 12 firms that were in the sample less than 4 years. The final non-CAP sample has 927 firm-years.

There were 160 firms that were subject to UTB filing requirements in the first year the firm is present in the sample, but 21 firms had an *fyear* of 2008, leaving 139 firms in *fyear* 2007.

⁷ The IRS rule for determining the “year” can be determined by examining the “year” used to classify each CAP taxpayer.

⁸ Schedule M-3, Part I, Financial Information and net Income (Loss) Reconciliation. 1a, asks, “Did the corporation file SEC Form 10-K for its income statement period ending with or within this tax year?”

TABLE 2. CAP Firms from 2005 Through 2011

Panel A: All CAP Firms: Public and Private								
	IRS YEAR							
	2005	2006	2007	2008	2009	2010	2011	Total
Beginning number of firms	0	16	34	73	94	101	112	
<i>Firms that joined each year:</i>								
Stayed in CAP through 2011	11	16	29	26	16	12	30	140
Left CAP before 2011	5	4	10	1				20
Total firms that entered CAP	16	20	39	27	16	12	30	160
<i>Firms that left each year:</i>								
Firms that entered in 2005		-2		-1	-2			-5
Firms that entered in 2006				-1	-2	-1		-4
Firms that entered in 2007				-4	-4		-2	-10
Firms that entered in 2008					-1			-1
Total firms that left CAP	0	-2	0	-6	-9	-1	-2	-20
CAP firms by year	16	34	73	94	101	112	140	140
Panel B: CAP Sample Years Subject to UTB Reporting Requirements: 2007–2012†								
	Compustat fyear							
	CAP UTB sample	2007	2008	2009	2010	2011	2012	
Beginning number of firms	160	66	93	101	111	138	140	
Firms that left the CAP program	-20	-16	-12	-3	-2			
Remaining number of firms	140	50	81	98	109	138	140	
Private firms	-10	-2	-5	-5	-7	-11	-11	
Subsidiaries	-12	-3	-6	-7	-9	-11	-11	
Foreign firms	-3		-1	-3	-3	-3	-3	
Fiscal year end change	-1	-1	-1	-1	-1	-1	-1	
Firms acquired in 2012							-5	
Bankruptcy	-1			-1	-1	-1	-1	
Not covered by Compustat before 2011	-1	-1	-1	-1	-1	-1	-1	
Unable to classify	-2	-1	-1	-1	-1	-2	-2	
Total sample firms	110	42	66	79	86	108	105	

† In Panel A, the IRS 2007 year shows 73 firms, whereas in Panel B, the Compustat fyear shows 67. The 6 firms have fiscal-year-ends after May and thus are considered 2007 fyears, but Panel B includes only the 2007 calendar year firms because the other 2007 fyear firms do not report UTBs until fyear 2008. Thus, all of the firm years shown in the Panel B are subject to UTB reporting requirements. The 2012 column assumes steady state from 2011, with the exception of 5 firms that were acquired in 2012. We did not have the new 2012 CAP firms at the time of this analysis, but we know from GAO (2013, 11) there were 161 CAP taxpayers.

TABLE 3. Non-CAP Sample Determination

	Non-CAP sample selection	Compustat fyear					
		2007	2008	2009	2010	2011	2012
Total Non-CAP Firms	286						
Former CAP firms	-4						
Private firms	-25						
Subsidiaries	-42						
Foreign firms	-3						
Changed fiscal year end	-1						
Bankruptcy	-1						
Unable to classify	-22						
Subtotal	188						
Not on Compustat	-16						
Total sample firms	172	149	167	164	160	156	152
Firms with less than 4 yrs	-12	-10	-7	-4			
	160	139	160	160	160	156	152

6. Across-Firm Analysis

6.1 Industry Distribution

Table 4 provides the industry distribution by one-digit SIC code for the CAP, non-CAP, and Compustat firms in general. The CAP sample has relatively more firms in the construction and transportation industries and relatively fewer in the manufacturing industry.

TABLE 4. Industry Distribution for 2007 CAP, Non-CAP, and Compustat Samples

		CAP	Non-CAP	Compustat
1	Agriculture, forestry, & mining	5.5%	10.0%	5.7%
2	Construction	20.0%	13.8%	15.7%
3	Manufacturing	18.2%	26.3%	23.8%
4	Transportation	18.2%	9.4%	8.0%
5	Wholesale	12.7%	16.3%	8.6%
6	Financial services	12.7%	13.8%	20.6%
7	Hotels, services	8.2%	8.1%	12.2%
8	Services	4.5%	2.5%	5.4%

NOTE: The Compustat sample is for the fyear 2007. In an attempt to provide a sample from which the CAP and non-CAP firms could be drawn, we drop subsidiaries, nontaxpaying entities, non-U.S. firms, and firms with assets less than 10 million, resulting in 5,180 firms in the Compustat sample in 2007.

6.2 Firm Characteristics

Table 5 provides descriptive statistics for the firm characteristics for the full sample period for the CAP and non-CAP samples. The descriptive statistics are consistent with expectations for CAP firms having lower *foreign* and lower *CFO*. Contrary to expectations for CAP firms, *ROA* is higher, *NOL* is lower and *CAPINT* is higher. *MTB* and *RD* differences are not significant. The CAP firms are significantly larger and more levered across years, but the relation of tax aggressiveness with *Size* and *Leverage* is not obvious. Thus, the evidence is mixed with respect to the firm characteristics.

TABLE 5. Descriptive Statistics: Firm Characteristics, CAP and Non-CAP Sample Measures Across 2004–2012

		N	mean	sd	p25	p50	p75
CAP	SIZE	640	9.205	1.309	8.328	9.093	10.192
	FOREIGN	640	0.539	0.499	0.000	1.000	1.000
	CFO	640	0.098	0.058	0.062	0.092	0.131
	ROA	640	-0.001	0.309	0.036	0.070	0.123
	NOL	640	0.411	0.492	0.000	0.000	1.000
	Leverage	636	0.226	0.136	0.132	0.220	0.303
	MTB	632	4.396	30.743	1.374	2.011	3.039
	RD	640	0.013	0.027	0.000	0.000	0.016
	CAPINT	622	0.580	0.368	0.266	0.560	0.850
	INTAN	634	0.204	0.194	0.025	0.160	0.336
Non-CAP	SIZE	927	8.956	1.460	7.893	9.062	10.111
	FOREIGN	927	0.617	0.486	0.000	1.000	1.000
	CFO	927	0.105	0.072	0.058	0.100	0.149
	ROA	927	-0.055	0.395	0.022	0.080	0.132
	NOL	927	0.506	0.500	0.000	1.000	1.000
	Leverage	925	0.208	0.180	0.085	0.178	0.286
	MTB	888	3.437	13.558	1.250	1.934	3.242
	RD	927	0.015	0.033	0.000	0.000	0.017
	CAPINT	850	0.560	0.428	0.220	0.499	0.803
	INTAN	919	0.216	0.213	0.029	0.145	0.360

NOTE: Bolded means are significantly different between the two samples at the .1 level or lower.

6.3 Firm Tax Aggressiveness Measures

Table 6 reports the tax aggressiveness measures for the CAP and non-CAP samples. CAP firms have higher foreign tax rates (*TXFO_ETR*) and lower federal rates (*TXFED_ETR*) than the non-CAP sample. Other ETR measures are not significantly different. The CAP sample has lower *UTB* and *UTB-ETR* relative to the non-CAP sample, indicating that the CAP firms have fewer uncertain tax positions that resulted in UTBs, consistent with the CAP “angel” hypothesis. The lower domestic rates, however, are inconsistent with the “angel” hypothesis.

TABLE 6. Descriptive Statistics: Tax Aggressiveness Measures, CAP and Non-CAP Sample Measures Across 2004–2012

		N	mean	sd	p25	p50	p75
CAP	<i>ETR</i>	368	0.314	0.078	0.279	0.319	0.355
	<i>CETR</i>	368	0.297	0.128	0.231	0.296	0.353
	<i>TXWW_ETR</i>	368	0.273	0.116	0.216	0.276	0.328
	<i>TXFED_ETR</i>	368	0.272	0.178	0.172	0.271	0.338
	<i>TXFO_ETR</i>	362	0.312	0.209	0.196	0.274	0.375
	<i>CashETR</i>	365	0.254	0.128	0.173	0.254	0.322
	<i>LRCashETR</i>	290	0.257	0.083	0.210	0.263	0.311
	<i>BTD</i>	213	0.035	0.057	0.009	0.030	0.053
	<i>PBTD</i>	213	0.027	0.058	0.004	0.019	0.038
	<i>UTB</i>	226	0.009	0.010	0.003	0.006	0.013
	<i>UTB-ETR</i>	226	0.006	0.008	0.002	0.004	0.008
Non-CAP	<i>ETR</i>	645	0.308	0.100	0.264	0.310	0.361
	<i>CETR</i>	645	0.294	0.120	0.224	0.287	0.350
	<i>TXWW_ETR</i>	645	0.270	0.112	0.207	0.266	0.312
	<i>TXFED_ETR</i>	645	0.299	0.183	0.209	0.284	0.354
	<i>TXFO_ETR</i>	619	0.274	0.174	0.182	0.256	0.325
	<i>CashETR</i>	643	0.253	0.128	0.176	0.252	0.319
	<i>LRCashETR</i>	495	0.260	0.086	0.206	0.262	0.323
	<i>BTD</i>	419	0.035	0.072	0.008	0.028	0.050
	<i>PBTD</i>	419	0.030	0.078	0.006	0.019	0.043
	<i>UTB</i>	398	0.014	0.013	0.005	0.010	0.018
	<i>UTB-ETR</i>	398	0.011	0.011	0.003	0.010	0.013

NOTE: Bolded means are significantly different between the two samples.

We conduct a separate year analysis only for the UTB measures. Table 7 results suggest that the reason we do not see a significant difference for the UTB measures in 2007–2009 is because there were fewer active CAP years in those years. As the number of firms in the CAP program increase over the years, these measures become lower in 2010 and 2011 for the CAP firms. In 2012, all the CAP firms are active in the CAP program. Only the *UTB-ETR* measure is significantly lower for the CAP firms relative to the non-CAP firms. The UTB measures suggest that the CAP firms may become less aggressive over time, but the alternative explanation is that the tax positions are resolved sooner for firms in the CAP program.

TABLE 7. CAP/Non-CAP Sample UTB and UTB-ETR, 2007–2012

	UTB							UTB-ETR						
	N	mean	sd	p25	p50	p75	p	N	mean	sd	p25	p50	p75	p
	2007							2007						
Non-CAP	139	0.012	0.013	0.003	0.009	0.017		134	0.008	0.009	0.001	0.005	0.011	
CAP	95	0.011	0.010	0.004	0.007	0.015	0.457	93	0.007	0.007	0.001	0.004	0.009	0.322
CAP years	42	0.009	0.008	0.002	0.007	0.014	0.152	40	0.006	0.007	0.001	0.004	0.010	0.431
	2008							2008						
Non-CAP	160	0.012	0.013	0.003	0.009	0.017		156	0.009	0.011	0.002	0.005	0.011	
CAP	110	0.010	0.012	0.002	0.007	0.015	0.161	107	0.007	0.008	0.001	0.005	0.009	0.107
CAP years	66	0.010	0.009	0.002	0.007	0.016	0.093	63	0.007	0.007	0.001	0.005	0.010	0.229
	2009							2009						
Non-CAP	160	0.012	0.013	0.003	0.008	0.017		156	0.008	0.010	0.002	0.005	0.011	
CAP	110	0.010	0.012	0.002	0.006	0.013	0.156	107	0.007	0.010	0.001	0.004	0.009	0.198
CAP years	79	0.009	0.01	0.002	0.006	0.011	0.032	76	0.006	0.008	0.001	0.003	0.008	0.061
	2010							2010						
Non-CAP	160	0.011	0.013	0.003	0.007	0.015		155	0.008	0.01	0.001	0.004	0.010	
CAP	110	0.008	0.010	0.002	0.005	0.011	0.029	107	0.006	0.009	0.001	0.003	0.007	0.071
CAP years	86	0.007	0.008	0.001	0.004	0.009	0.005	83	0.005	0.007	0.000	0.003	0.005	0.012
	2011							2011						
Non-CAP	156	0.011	0.011	0.003	0.007	0.014		151	0.008	0.009	0.002	0.005	0.010	
CAP	110	0.006	0.008	0.001	0.004	0.008	0.001	105	0.005	0.007	0.001	0.002	0.006	0.010
CAP years	108	0.006	0.008	0.001	0.004	0.008	0.001	103	0.005	0.008	0.001	0.002	0.006	0.010
	2012							2012						
Non-CAP	152	0.011	0.013	0.002	0.007	0.014		148	0.008	0.010	0.001	0.005	0.011	
CAP	105	0.010	0.041	0.001	0.003	0.007	0.724	101	0.004	0.006	0.001	0.002	0.005	0.000

Next, we perform a multivariate analysis by regressing three measures of tax expense on the three related incomes and the firm characteristic control variables and a CAP indicator variable as well as the CAP indicator interacted with the income measures. The models used for this regression are as follows:

$$TXWW_{it} = a_0 + \theta_1 PI_{it} + \theta_2 CAP_t + \theta_3 PI_i * CAP_t + \sum_k \theta_k CONTROL_{it}^k + \varepsilon_{it} \quad (1)$$

$$TXFO_{it} = a_0 + \theta_1 PIFO_{it} + \theta_2 CAP_t + \theta_3 PIFO_i * CAP_t + \sum_k \theta_k CONTROL_{it}^k + \varepsilon_{it} \quad (2)$$

$$TXFED_{it} = a_0 + \theta_1 PIDOM_{it} + \theta_2 CAP_t + \theta_3 PIDOM_i * CAP_t + \sum_k \theta_k CONTROL_{it}^k + \varepsilon_{it} \quad (3)$$

All variables are defined in Table 1 Panel B. A positive (negative) coefficient on the CAP interaction term is interpreted as CAP firms being associated with higher (lower) tax rates. We use robust regression, which controls for outliers by iteratively assigning weights to these observations to mitigate their influence. Table 8 reports the results. We find that the coefficient on $PIFO * CAP$ is positive and significant in the foreign income tax regression. This result suggests that CAP firms shift less foreign income to low tax jurisdictions. If CAP firms shift less foreign income to low

tax jurisdictions, the incentive to shift U.S. income outside the U.S. is not as strong, suggesting that they are less likely to offshore intangible property or engage in other aggressive transfer pricing practices.

TABLE 8. Estimates of Tax Rates on Pretax Income

Intercept	0.0010		0.0020		-0.0005
<i>PI</i>	0.2843				
<i>PIDOM</i>			0.3068		
<i>PIFO</i>					0.2109
<i>CAP</i>	0.0010		-0.0009		0.0007
<i>PI*CAP</i>	0.0130				
<i>PIDOM*CAP</i>			-0.0107		
<i>PIFO*CAP</i>					0.0358
<i>SIZE</i>	-0.0008		-0.0002		-0.0002
<i>FOREIGN</i>	-0.0014		-0.0004		0.0014
<i>NOL</i>	-0.0024		-0.0024		0.0002
<i>Leverage</i>	-0.0047		-0.0048		0.0007
<i>MTB</i>	0.0001		0.0001		0.0000
<i>RD</i>	-0.0411		0.0183		-0.0149
<i>CAPINT</i>	-0.0015		-0.0052		0.0018
<i>INTAN</i>	-0.0011		-0.0048		0.0014
<i>N</i>	968		968		970
<i>R</i> ²	0.621		0.609		0.550

Bolded coefficients are significant at the .1 level or lower.

8. Conclusion

We examine whether CAP firms are more tax compliant than a matched sample of non-CAP firms provided to us by the IRS. Since tax compliance is difficult to measure, we use the negative of tax compliance—tax aggressiveness—for our tests. We find some evidence that CAP firms are less tax aggressive than the matched firms, but in general our results are mixed CAP firms have lower federal effective tax rates, but higher foreign tax rates. We find that CAP firms have lower UTBs and UTB-ETR which may be measures of aggressiveness. From the descriptive statistics overall, we find some evidence that CAP firms are less aggressive using common measures from the tax avoidance literature.

The multivariate analysis generally shows that CAP firms are not more or less tax aggressive than non-CAP firms using traditional measures of tax aggressiveness. An interesting result from this analysis shows that CAP firms have higher foreign tax rates than non-CAP firms. This result suggests that CAP firms are less aggressive foreign income shifters than non-CAP firms and thus less likely to engage in more aggressive income shifting such as offshoring intangibles. In the next phase of this research, we plan to investigate further whether CAP firms are more tax compliant by examining various measures of international tax aggressiveness using information contained in various income tax filings.

Appendix

IRS UTB Data

The IRS collected UTB data from the 10-Ks filed with the SEC beginning with calendar-year end 2007 firms, which were the first to report UTBs. After dropping 3 firm-years missing the CIK, which we use to match with Compustat data, 162 firm-years affected by a fiscal year-end change, and 21 firm-years that report negative UTB, the IRS sample consists of 48,600 firm-years from 2007-2012, representing 12,801 unique firms.

The following cross-tabulation of firms by year and *Fyear*, where year is the year that includes the final month of the fiscal year, and *Fyear* follows the Compustat designation as the year that includes at least 7 of the 12 months of the fiscal year. In the year 2007, there were 5,596 2007 fyear firms; in the year 2008, there were 889 2007 fyear firms (fiscal year-end was in January-May, 2008) and 8,199 2008 fyear firms. There are fewer year 2007 firms because we include only the 2007 firms that were subject to UTB reporting.

FIRMS by Year and Fyear

YEAR	fyear							Total
	2007	2008	2009	2010	2011	2012	2013	
2007	5,596							5,596
2008	889	8,199						9,088
2009		1,218	7,884					9,102
2010			1,188	7,601				8,789
2011				1,139	6,960			8,099
2012					498	5,636		6,134
2013						857	935	1,792
Total	6,485	9,417	9,072	8,740	7,458	6,493	935	48,600

Although IRS compiled the UTB data for all firms that filed a 10-K with the SEC, not all firms made a UTB disclosure. As shown below, the percent of firms not disclosing any UTB information averages 29.9 percent, ranging from a high of 34.6 percent in 2010 to a low of 21.3 percent in 2007.

PERCENT of Firms Not Disclosing Any UTB Information

	fyear						Average
	2007	2008	2009	2010	2011	2012	
UTB>0	40.4	32.5	32.7	32.9	34.6	33.8	34.5
UTB=0	38.3	36.2	36.8	32.5	35.5	34.7	35.6
Missing	21.3	31.3	30.5	34.6	30.0	31.5	29.9

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