When are Enhanced Relationship Tax Compliance Programs Mutually Beneficial?

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ABSTRACT: This study investigates the circumstances under which "enhanced relationship" tax-compliance programs are mutually beneficial to taxpayers and tax authorities, as well as how these benefits are shared. We develop a model of taxpayer and tax authority behavior inside and outside of an enhanced relationship program. Our model suggests that, despite the adversarial nature of the relationship, an enhanced relationship program is mutually beneficial in many settings. The benefits are due to lower combined government audit and taxpayer compliance costs. These costs are lower because taxpayers are less likely to claim positions with weak support and the government is less likely to challenge positions with strong support inside the program. Further, we show that an increase in the ability of the tax authority to identify uncertain tax positions makes an enhanced relationship tax-compliance program more attractive to both the taxpayer and the tax authority.

Keywords: *cooperative tax compliance*; *strategic auditing*; *uncertain tax positions*.
JEL Classifications: *H26*.

I. INTRODUCTION

This study investigates the costs and benefits to both corporate taxpayers and tax authorities of "enhanced relationship" tax-compliance programs that have recently developed worldwide. Examples of such programs include the Dutch Horizontal Monitoring program

initiated in 2005, Australia's Annual Compliance Arrangement (ACA) in operation since 2008, the South Korean Horizontal Compliance Program (HCP) started in 2010, as well as the U.S. Compliance Assurance Process (CAP), which has existed since 2005. The United Kingdom is also in the process of implementing a similar program.[1] At first glance, the collaborative premise of these programs is surprising because of the inherently adversarial relationship between the tax authority and the taxpayer. Nevertheless, the number and size of these programs continues to grow. The goal of our study is to characterize the circumstances under which these programs are mutually beneficial to the taxpayer and the tax authority, as well as how these benefits are shared when the program benefits both parties.

The stated purpose of enhanced relationship programs is to increase transparency and cooperation between taxpayers and tax authorities in order to resolve tax issues in a timely manner. Admissions into these programs are typically initiated by the tax authority, which invites taxpayers primarily based on size and the quality of the taxpayer's internal control system regarding tax risks. By entering the program, there is an understanding that the taxpayer will disclose significant uncertain tax positions to the tax authority in return for a timely resolution of these positions. "Uncertain tax positions" refer to transactions entered into by the taxpayer for which it claims tax benefits on its tax return that may not be fully sustained upon audit, where a tax benefit is anything that reduces taxes paid, such as a reduction in taxable income. This uncertainty may arise from ambiguity in the tax law about whether such a position is allowed given the taxpayer's facts or from ambiguity in calculating the amount of the position.[2] Furthermore, there is an understanding that the tax authority will only review the filed tax return to ensure that it does not contain material undisclosed issues, and not challenge positions that were agreed upon earlier.[3]

We investigate why either party behaves in a manner consistent with these "understandings." For example, if the tax authority cannot credibly commit to use the disclosed information only as outlined in the understanding, why does the taxpayer disclose any uncertain tax positions? Furthermore, our discussions with agents involved with the Compliance Assurance Process of the Internal Revenue Service (IRS) revealed that, although the IRS has identified firms in the program that are providing less-than-transparent disclosures, no taxpayer has been asked to leave the program to date. Why does the tax authority allow taxpayers to participate in the program in the face of observed noncompliance with its terms?

We consider a setting in which the taxpayer can take uncertain tax positions with strong support, which may or may not be sustained upon audit, as well as uncertain tax positions with weak support, which will not be sustained upon audit. Outside the enhanced relationship program, the tax authority conducts a review of the tax return and decides whether to audit discovered uncertain positions. Within the enhanced relationship program, the tax authority continues to conduct a review of the tax return and also examines any uncertain tax positions disclosed by the taxpayer. Both outside and inside the program, the tax authority may detect undisclosed uncertain

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[1] See Nolan and Ng (2011) for additional details on these programs.

[2] For example, Internal Revenue Code §41 allows a tax credit for "qualified research activities." Research credits claimed by a taxpayer can be uncertain because of ambiguity regarding what activities qualify for the credit, or because of ambiguity regarding how to calculate the credit. Further, tax authority directives to disallow types or amounts of inputs used in calculating a credit are common. Thus, it is possible that a taxpayer has strong facts and circumstances supporting qualification for and calculation of the credit, but still has uncertainty as to the amount of tax benefit that would ultimately be sustained if audited.

[3] The period for the audit is dramatically shortened inside the program and, thus, the effort the tax authority may expend is bounded, resulting in lower audit costs for both the taxpayer and tax authority in all periods of program participation. However, the tax authority is informed by the taxpayer's disclosure, which may serve as a substitute for auditing the specific transactions disclosed. Therefore, although the audit itself is less broad and less costly, the total information obtained by the tax authority and the total cost to the taxpayer to provide this information do not necessarily decrease.

tax positions upon review of the tax return, but is unable to tell whether the position has strong or weak support without auditing the position. The enhanced relationship tax-compliance program has a direct effect on positions with strong support because the cost of auditing exceeds the expected tax that the tax authority would collect if it were to challenge the position. Thus, both sides benefit from disclosure of strong positions. In addition, the program has an indirect effect on weak positions because the disclosure of strong positions changes the tax authority's information set. Within the program, the tax authority correctly infers that any detected undisclosed position is weak because a position is disclosed if and only if it is strong and, thus, the tax authority is certain that it will benefit from auditing detected undisclosed positions.[4]

Our model features two types of equilibria, depending on the ability of the tax authority to detect an uncertain tax position by reviewing the tax return. Detection probability likely varies over time and jurisdiction. For example, recent increases in disclosures of book-tax difference and/or uncertain tax positions in the U.S., such as Schedule M-3, FASB Interpretation Number 48, *Accounting for Uncertainty in Income Taxes*, codified as ASC 740, and Schedule UTP, likely increase the detection ability of the IRS relative to the periods before these disclosures.[5] Tax authorities in countries with higher book-tax conformity likely have higher detection ability than countries with lower book-tax conformity. Public disclosure of private firm financial information should also increase detection ability.

The first type of equilibrium is one in which the tax authority is able to detect uncertain positions with a sufficiently high probability. In this High Detection Rate Case, equilibrium outside of the program features a mixed reporting strategy by the taxpayer and a mixed audit strategy by the tax authority. Taxpayers will be willing to enter the enhanced relationship program if the cost of the additional disclosure is low relative to the cost of internal documentation for claimed positions and the benefits lost when the tax authority challenges a strong position. All taxpayers that enter the program will claim only uncertain tax benefits with strong support, thereby living up to their pledge of truthfully disclosing all uncertain positions to the tax authority.

The second type of equilibrium is one in which the probability that the tax authority is able to identify uncertain positions from the tax return is sufficiently low. In this Low Detection Rate Case, the taxpayer will claim uncertain tax benefits with either weak or strong support outside the program because the threat of audit has no deterrent effect. In turn, the tax authority will challenge

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[4] For example, the tax authority could detect from its review of the tax return that the taxpayer claimed a research credit and, in comparing this to the taxpayer's disclosures of uncertain tax positions, infer that the research credit was not disclosed. Although outside the program, the tax authority is unable to determine whether the taxpayer has strong facts supporting the amount of the claimed credit without challenging and auditing the credit, within the program the authority will correctly infer that the detected undisclosed position is weak. Another example is a taxpayer that has income from foreign subsidiaries reported on the tax return. The taxpayer should have documentation in place to support its intercompany transfer prices. Transfer-pricing positions are often uncertain due to rule and calculation ambiguity. The tax authority can detect from its review of the tax return that the taxpayer has uncertain tax positions related to transfer pricing, but without auditing the position the tax authority would not know whether the taxpayer has strong or weak support for the transfer-pricing positions.

[5] Schedule M-3 is a reconciliation between both consolidated financial statement income and consolidated book income reported on Form 1120, U.S. Corporation Income Tax Return, and consolidated book income reported on Form 1120 and consolidated taxable income required for large business taxpayers for tax years ending on or after 12/31/2004. Although its predecessor, Schedule M-2, required a similar reconciliation between consolidated book income on Form 1120 and consolidated taxable income, Schedule M-2 allowed the taxpayer considerable discretion in the level of this reconciliation. Schedule M-3 mandates a level of detail that is substantially higher than was previously provided by most taxpayers. Contingent tax liabilities are subject to mandatory recognition and disclosure requirements in quarterly and annual SEC filings under FASB Interpretation Number 48, *Accounting for Uncertainty in Income Taxes* (FIN 48), for tax years ending after 12/15/ 2006. Beginning with tax years ending on or after 12/31/2010, Schedule UTP of Form 1120 requires large corporations to disclose certain details of the uncertain tax positions for which they recorded an unrecognized tax benefit under FIN 48 for financial reporting purposes.

all uncertain tax positions that it detects. If a taxpayer chooses to enter the program, it will continue to claim all uncertain tax benefits with strong support as well as all uncertain tax benefits with weak support, but the taxpayer will only disclose positions with strong support. The tax authority will only challenge undisclosed positions that it discovers inside the program.

We find that the tax authority's pledge to conduct only a focused audit of the filed tax return, not challenging previously disclosed positions, is self-enforcing. The taxpayer's disclosure conveys to the tax authority that the position is strong and helps the tax authority avoid challenging positions for which the cost of auditing exceeds the expected tax revenue from challenging the position. In addition, even when the taxpayer does not live up to its pledge to disclose all uncertain tax positions, the program can still reduce total expected tax-compliance costs incurred by the taxpayer and the tax authority. Therefore, the tax authority's decision not to expel firms that fail to disclose all uncertain tax positions is rational when the tax authority achieves higher payoffs within the program, even though the understanding that the taxpayer will disclose all uncertain tax positions is not fulfilled in equilibrium. These findings indicate that a cooperative approach to resolving uncertain tax positions can be beneficial even if neither party can be punished for violating the agreed-upon terms of an enhanced relationship program. Finally, if the tax authority's ability to detect undisclosed tax positions is sufficiently high, then the taxpayer's pledge to be transparent is self-enforcing in equilibrium.

Our research informs tax authorities and taxpayers considering implementing or participating in enhanced relationship programs. We first characterize the optimal reporting and auditing behavior both in and out of the program. We then characterize the conditions under which entering the enhanced relationship program is beneficial to both the tax authority and the taxpayer. We also identify settings in which the program would decrease expected total tax-compliance and audit costs, but these savings are not achieved because the program would make one party or the other worse off. In particular, we find that the range of government audit costs for which the tax authority is willing to enter the program is strictly larger in the High Detection Rate Case than in the Low Detection Rate Case, and therefore social welfare enhancing gains are more likely to be realized in the High Detection Rate Case. Finally, our analysis also shows that an increase in the ability of the tax authority to detect uncertain tax positions makes the program more attractive to both the tax authority and the taxpayer.

Section II discusses related literature. Section III provides background regarding enhanced relationship programs. We present our model and results in Section IV, and Section V concludes.

II. RELATED LITERATURE

The relationship between the taxpayer and the tax authority has received considerable attention in the accounting literature. Our study follows a significant line of research dating back to the 1980s that models the interaction between the taxpayer and the tax authority as a strategic game in which the taxpayer's reporting decision and the tax authority's audit decision are each best responses to the other player's choice. Graetz et al. (1986) and Reinganum and Wilde (1986) were the first to model tax compliance as an interactive game in which the tax authority could not credibly commit to an audit strategy.

In practice, tax law complexity leads to uncertainty in determining taxable income. Some tax positions taken by taxpayers are uncertain with respect to the amount of tax benefit that would be ultimately allowed upon audit. Beck and Jung (1989a) introduce tax position uncertainty to the taxpayer compliance model, examining conditions under which this uncertainty prompts more or less under-reporting of taxable income. Beck and Jung (1989b) extend this approach to include taxpayer uncertainty with respect to tax authority audit costs, finding that audit cost uncertainty

affects incentives differently than tax position uncertainty. Other studies that analyze different types of uncertainty include Beck et al. (1996) and Reinganum and Wilde (1988).

Subsequent studies examine the effect of a signal observed by the tax authority regarding the taxpayer's taxable income on the strategies employed by the two players. In Sansing (1993), the tax authority privately observes a noisy signal regarding the taxpayer's taxable income before making its audit decision. He finds that information acquired by the tax authority not only affects the audit decision, but also affects the taxpayer's decision whether to engage in tax evasion. In Mills and Sansing (2000), the tax authority observes the financial accounting treatment of a transaction before deciding whether to audit the transaction. They find that transactions that generate a positive book-tax difference carry a higher probability of being selected for audit. However, book-tax differences do not affect expected audit adjustments because taxpayers are less likely to misreport a transaction that would generate a book-tax difference.

Mills et al. (2010) allow the tax authority to observe the taxpayer's contingent liability for unrecognized tax benefits before making its audit decision. Contingent tax liabilities are subject to mandatory recognition and disclosure requirements under FIN 48 for tax years ending after December 15, 2006. Their model assumes that firms fully comply with FIN 48. Under this assumption, they find that disclosures of uncertain tax positions benefit taxpayers with strong facts supporting their positions, but hurt taxpayers with weak facts underlying their positions.

Our approach expands upon these models by introducing a setting in which the tax authority can credibly commit to reviewing all disclosed positions if the parties enter into an enhanced relationship tax-compliance program. The tax authority's commitment is credible in this context because the review process in an enhanced relationship program is a joint effort between the taxpayer and the tax authority. In contrast, the prior literature had modeled the audit process as a unilateral action taken by the tax authority. A key feature of the setting we examine is that participation in the program is voluntary and, thus, will only take place if each party believes it will benefit. Furthermore, our model allows both the taxpayer and the government to deviate from the "understandings" that the taxpayer will disclose all uncertain tax positions and that the government will not challenge positions that were agreed upon earlier.

Our study more closely relates to the literature examining voluntary disclosures of uncertain tax positions. Beck et al. (2000; hereafter, BDJ) allow taxpayers to make a voluntary disclosure of an uncertain tax benefit in order to avoid a penalty if the tax return is audited and the benefit from the disclosed position is lost upon audit. However, this voluntary disclosure could increase the probability of audit and subject the taxpayer to other audit penalties. When taxpayers expect disclosure to increase the probability of audit, BDJ find different equilibrium reporting strategies corresponding to the probability that the uncertain tax position would be disallowed upon audit. Taxpayers with a higher probability of successfully defending their uncertain tax positions upon audit gain no benefit of disclosure, whereas taxpayers with weaker facts supporting their uncertain position benefit from voluntary disclosure. This result is contrary to the findings of Mills et al. (2010) and stems from the assumption in BDJ of a rule that exempts taxpayers from penalties if the uncertain position is voluntarily disclosed.

As in BDJ, we expand existing models by including a mechanism for voluntary taxpayer disclosure of uncertain tax benefits. However, we study a different institutional arrangement and investigate a different research question. Specifically, BDJ seeks to explain why some taxpayers disclose uncertain tax positions and others do not, in terms of differences in the taxpayers' private information regarding the uncertain tax positions. In contrast, we ask why some taxpayers enter into enhanced relationship tax-compliance programs and others do not, in terms of taxpayer attributes that are common knowledge. Consequently, the model in BDJ differs from our model in several important respects. First, BDJ features a heterogeneous set of taxpayers, each of whom has the opportunity to engage in one uncertain tax position. Each taxpayer has a different probability p that

this uncertain tax position would be rejected upon audit. In contrast, taxpayers in our study are homogeneous with respect to the opportunity to take uncertain tax positions.

Second, the disclosure and tax-reporting decisions in BDJ are made unilaterally by the taxpayer, and take place after the taxpayer learns p. Therefore, the tax authority updates its beliefs regarding p after observing the tax return and the disclosure, or lack thereof. In our model, the decision to enter the disclosure program occurs first and is made cooperatively by the taxpayer and the tax authority. The taxpayer's discovery of and decisions regarding uncertain tax positions happen later. Therefore, the decision to enter the program conveys no information to the tax authority.

Third, taxpayers disclose uncertain tax positions in BDJ if the benefit of avoiding a negligence penalty exceeds the cost of the increased audit probability; differences in p drive differences in whether taxpayers disclose. In contrast, we focus on the characteristics that make the disclosure program beneficial for both the taxpayer and the tax authority, such as audit costs and the cost of verifying disclosures made by the taxpayer, because voluntary participation in an enhanced relationship program will only occur if both parties expect to benefit.

Prior papers that model cooperative approaches to tax compliance include Tomohora (2004) and De Waegenaere et al. (2007), both of which model the use of bilateral advance pricing agreements (BAPAs). BAPAs are binding agreements between one taxpayer and two tax authorities that are designed to reduce double taxation, uncertainty for the taxpayer, and compliance costs for the tax authorities. BAPAs are similar to our setting in that they are voluntary agreements between tax authorities and taxpayers that involve the taxpayer disclosing information about its tax positions that it would not otherwise disclose. However, BAPAs are limited to a narrow set of tax positions involving intercompany pricing, require negotiations between two tax authorities, and are binding for both tax authorities and the taxpayer. In contrast, the enhanced relationship program concerns all uncertain tax positions entered into by the taxpayer, involves only a single tax authority, and is not binding with respect to the pledges made upon entering the program.

Finally, the empirical study by Beck and Lisowsky (2012) examines participants in the IRS CAP program. They find that voluntary participants in this U.S. enhanced relationship program report larger uncertain tax benefits under FIN 48 on their financial statements prior to entering the program than non-participants. They also find that these participants experience a decrease in the magnitude of reported uncertain tax benefits as early as within the first year of participation. Whereas their paper focuses on assessing financial statement effects of voluntary participation in an enhanced relationship program, our model focuses on the effects of the program on tax-reporting behavior and compliance costs.

III. ENHANCED RELATIONSHIP PROGRAMS

Programs designed to resolve tax disputes before they reach litigation, termed "alternative dispute resolution" programs, have existed for many years. Historically, both pre-filing and post-filing alternative dispute resolution programs were undertaken on a transaction-by-transaction basis. An example of this type of common alternative dispute resolution is the use of binding arbitration to resolve factual issues in tax disputes (Wrappe 1995).

Recently, some countries have begun to broaden their alternative dispute resolution programs. In 2005, The Netherlands introduced a pre-filing program called "Horizontal Monitoring" under which the taxpayer promises, through an "Enforcement Covenant," to actively notify the Dutch Tax Administration of any issues with possible and significant tax risk prior to filing the tax return. In return, the tax authority provides timely advice on the disclosed issues. The Dutch Tax Authority characterizes this program as "based not only on trust but self-regulation as well" and states that key elements of this program are "mutual trust, understanding, and transparency."

Around the same time, the IRS launched a pilot program similar to the Horizontal Monitoring Program in The Netherlands, called Compliance Assurance Process. In CAP, taxpayers are expected to disclose material transactions as they occur during the tax year. A filed tax return, generally due two and a half months after the end of the tax year or eight and a half months with an extension, that is consistent with the earlier disclosures will be accepted by the IRS with no audit after the return is filed. CAP does include a review of the filed tax return by the IRS and an *ex post* attestation by the taxpayer that it has disclosed material issues to the IRS. The purpose of the review is to ensure that the filed tax return does not contain material issues that were not disclosed and, thus, a review has a significantly reduced scope when compared to an audit.

Discussions with IRS personnel highlighted several differences between the CAP program and regular audits. First, the resolution of how a transaction should be treated for tax purposes is much faster in the CAP program, occurring before the tax return is filed. For firms not in the CAP program, the statute of limitations for corporations allows the IRS to initiate an audit up to three years after the due date of the tax return. Although the IRS must propose a deficiency within three years of initiating an audit, in practice corporations usually sign a waiver of this deadline. Therefore, the closure date of an IRS audit can extend well beyond six years past the tax return due date, and litigation could follow. The reduced timeline of the CAP program generally reduces the tax authority's compliance costs. Costs are also lower because the post-filing review of the tax return occurs when taxpayer knowledge of the transactions is fresh and key implementation personnel are still with the company.

The early successes of Horizontal Monitoring and CAP encouraged other tax authorities to implement similar pre-filing enhanced relationship programs. Australia initiated a pilot program in 2008, called Advance Compliance Arrangements (ACA). Under ACA, taxpayers are expected to disclose all potential tax issues. As a result, the Australian Tax Office signs off on low-risk tax matters and resolves disputes by the time the tax return is filed (Nolan and Ng 2011). ACA initially invited the largest 50 firms listed on the Australian Stock Exchange to join the program. Although not all of these invited firms chose to join the program, the early response was positive enough that the Australian Tax Office plans to significantly expand the use of ACA. Last, South Korea began a two-year pilot program, the Horizontal Compliance Program (HCP), with 14 firms in 2009. HCP is very similar to the Dutch Horizontal Monitoring program. The early positive response prompted the South Korean Tax Office to extend the program to 70 companies in 2011.

IV. MODEL

Behavior Outside the Program

We assume that all taxpayers file a tax return with a risk-neutral government tax authority (G). The taxpayer (T) has the opportunity to take N reporting positions on its tax return that might not be sustained due to the possibility of an audit, which we refer to as uncertain tax positions.[6] If the taxpayer takes no uncertain tax positions, then it reports taxable income of Y and pays a tax liability of τY, where τ is the statutory tax rate. We normalize the dollar value of each uncertain tax position to \$1. Each position has the effect of reducing the taxpayer's taxable income by \$1 and, thus, reducing its taxes by \$$\tau$.[7]

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[6] We use the term "uncertain tax position" without reference to any particular regulation or guidance (e.g., FIN 48 in the U.S.). In our model, an uncertain tax position is any position that may not be sustained upon audit.

[7] For expositional convenience only, we characterize all uncertain tax positions as transactions that reduce taxable income. Uncertain tax positions can have other effects, such as whether an expenditure qualifies for a tax credit or a tax deduction.

The probability that a particular position is strong is $\sigma < 1$; otherwise, the position is weak. A strong position is sufficiently likely to be sustained upon audit that the tax authority would prefer not to challenge any position it knew to be strong. A weak position is sufficiently unlikely to be sustained that the tax authority would challenge any uncertain tax benefit it knew to be weak. We normalize the probability that a weak position is sustained upon audit to zero.[8] A strong position is sustained upon audit with probability π and lost with probability $1 - \pi$. Thus, strong and weak positions are uncertain because they both bear some risk that they will be disallowed upon audit. The expected value of the claimed tax benefit to the taxpayer, given it is audited, is $\pi\tau$ for strong uncertain positions and 0 for weak uncertain positions.

Tax compliance is costly for both the taxpayer and the tax authority. The taxpayer prepares internal documentation supporting each position before the return is filed, at a cost of c per position. This cost is incurred regardless of whether the position is audited and regardless of whether the taxpayer is in the enhanced relationship tax-compliance program. The tax authority's cost of challenging a claimed uncertain tax benefit is k. Because we normalize the dollar value of the reporting position to \$1, the costs c and k should be thought of as costs per dollar of the reporting position. Taxes are zero-sum wealth transfers; tax-compliance costs c and k are deadweight losses.[9]

All of the costs and benefits that we consider are monetary in nature. In particular, we do not include financial reporting considerations, such as the disclosure of unrecognized tax benefits under FIN 48 or the effect of uncertain tax positions on accounting earnings.[10] Furthermore, because both the taxpayer and the tax authority are assumed to be risk-neutral, the riskiness associated with taking an uncertain tax position does not affect either player's expected payoff. Our approach is consistent with the idea that managers strive to maximize firm value; because the risks associated with uncertain tax positions are unsystematic, a risk-averse shareholder can diversify them away. Therefore, firm managers make decisions regarding uncertain tax positions by striving to minimize the sum of expected taxes paid and tax-compliance costs.

In the absence of an enhanced relationship program, in our model the taxpayer can choose an aggressive reporting strategy by claiming both strong and weak uncertain tax positions, or a conservative reporting strategy by claiming only strong uncertain tax positions. The tax authority reviews the tax return at no cost.[11] Through the course of the review process, the tax authority may discover an uncertain tax position claimed by the taxpayer. However, the tax authority is unable to determine from this discovery alone whether the position is strong or weak. The tax authority only learns the strength of the position if it audits the position.[12]

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[8] This normalization simplifies the exposition. It is straightforward to generalize our results to a setting in which a weak position is sustained with probability λ, where λ is sufficiently low that the taxpayer would prefer not to claim the tax benefit if it knew that the position would be audited.

[9] We have not included penalties in the payoffs. Penalties are zero-sum wealth transfers. Our focus is on the conditions under which both parties benefit from an enhanced relationship agreement; including zero-sum wealth transfers would complicate our analysis, but would not change the fundamental forces at work in the model.

[10] A 2010 survey conducted by the IRS supports this, finding that 77 percent of firms agreed that participation in CAP had led to "less overall time spent on audits" and 67 percent agreed that CAP participation had resulted in "reduced staff burden" and "reduced administrative costs" (Deloitte 2012). We conclude that reducing tax-compliance costs is a principal reason firms enter CAP.

[11] Because firms that are invited to enter enhanced relationship programs typically are large firms that are already under continuous audit by the tax authority, we assume that the taxpayer's tax return itself is always reviewed. We normalize the cost of this review to 0.

[12] Discovering that an uncertain tax position exists does not reveal the strength of the position. For example, the review process could reveal that the taxpayer claimed a research credit without revealing whether the amount of credit claimed was supported by strong or weak facts. In addition, the review process could reveal that the taxpayer has foreign operations and, therefore, uncertain tax positions related to transfer pricing, without revealing whether the taxpayer's transfer-pricing documentation provides strong or weak support for the claimed transfer prices.

TABLE 1

Payoff Matrix Outside the Program

	Audit	Not Audit
Report Aggressively	$\{-\tau Y + N[\tau(1 - \delta + \delta\sigma\pi) - c],$ $\tau Y - N[\tau(1 - \delta + \delta\sigma\pi) + \delta k]\}$	$\{-\tau Y + N(\tau - c), \ \tau Y - N\tau\}$
Report Conservatively	$\{-\tau Y + N[\tau\sigma(1 - \delta + \delta\pi) - \sigma c],$ $\tau Y - N[\tau\sigma(1 - \delta + \delta\pi) + \delta\sigma k]\}$	$\{-\tau Y + N\sigma(\tau - c), \tau Y - N\sigma\tau\}$

Payoffs are $\{T,G\}$.

The probability that the tax authority identifies an uncertain tax position, conditional on the taxpayer claiming a tax benefit from an uncertain tax position, is δ. Assuming that the authority discovers an uncertain tax position, it must decide whether to audit that position.[13] If the tax authority audits a position, then it successfully challenges the position with certainty when the audited position is weak and successfully challenges the position with probability $1 - \pi$ when the audited position has strong support.

We impose the following three constraints on the parameter values. First, we assume that $c < \tau$, so that the taxpayer's compliance cost c is less than the tax rate τ. This constraint ensures that the cost of tax compliance does not deter the taxpayer from claiming a strong position on the tax return. Second, we assume that $k < \tau(1 - \sigma\pi)$, so that the tax authority's cost of challenging a reporting position (k) is less than the expected tax benefit being claimed, assuming that the taxpayer claims all uncertain tax benefits from both strong and weak positions. This ensures that the threat to audit is credible. Third, we assume that $k > \tau(1 - \pi)$, so that the cost of challenging a strong position exceeds the benefit. This implies that the tax authority would prefer not to challenge a tax position if it knew that the position were strong.

The payoff matrix is shown in Table 1. The payoffs are presented as $\{T,G\}$, where T represents the taxpayer's expected payoff and G represents the government's expected payoff. The payoffs reflect both the expected tax liability and the expected compliance and audit costs. If no uncertain tax positions were available ($N=0$), then the taxpayer's payoff would be $-\tau Y$ and the government's payoff would be τY. The taxpayer chooses between reporting aggressively by claiming both strong and weak uncertain tax positions and reporting conservatively by claiming only strong uncertain tax positions, whereas the tax authority chooses between conducting an audit and not conducting an audit when it discovers an uncertain tax position.

For example, under the strategy pair (Audit, Report Aggressively), the taxpayer claims N strong and weak positions at a cost c per position, and the tax authority detects and audits each detected position with probability δ. With probability σ, the audited position is strong, in which case the expected value of the retained tax benefit is π of the benefit claimed. With probability $1 - \sigma$, the audited position is weak, in which case the taxpayer retains none of the benefit claimed. Therefore, the taxpayer's expected incremental benefit from all detected positions is $N\delta\sigma\pi\tau$. If the tax authority does not detect a claimed position, which occurs with probability $1 - \delta$, then the taxpayer retains the full benefit τ of both strong and weak positions. Thus, the incremental expected

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[13] Although we characterize this as a sequential game, the distinction is not important in our setting. Because there is no uncertainty on the part of the tax authority regarding the taxpayer, auditing every detected uncertain tax position with the same probability is an optimal strategy, regardless of number of detected tax positions.

benefit to the taxpayer of undetected positions is $N(1 - \delta)\tau$. Summing these terms shows that the taxpayer's total payoff from reporting aggressively when the tax authority audits is $-\tau Y - Nc + N\delta\sigma\pi\tau + N(1 - \delta)\tau$, which simplifies to $-\tau Y + N[\tau(1 - \delta + \delta\sigma\pi) - c]$. The tax authority's payoff under this strategy is nearly symmetrical, except that the tax authority only pays the audit cost k if it detects and audits a position, which occurs with probability δ.

We characterize the equilibria when the taxpayer and the tax authority do not enter an enhanced relationship program in Proposition 1.

> **Proposition 1:** When the taxpayer and the tax authority do not enter the enhanced relationship program:
>
> (a) If $\delta \leq (\tau - c)/\tau$, then (Report Aggressively, Audit) is a unique equilibrium; and
> (b) if $\delta > (\tau - c)/\tau$, there is a unique mixed-strategy Nash equilibrium in which the government audits detected uncertain tax positions with probability $\alpha^* = (\tau - c)/(\delta\tau)$ and the taxpayer reports aggressively with probability $\beta^* = \sigma[k - \tau(1 - \pi)]/[(1 - \sigma)(\tau - k)]$. The players' expected payoffs are $\tau Y - \pi\sigma\tau^2/(\tau - k)$ for the tax authority and $-\tau Y + N\pi\sigma(\tau - c)$ for the taxpayer.

The proof is in Appendix A.

If the probability that the tax authority detects an uncertain tax position is sufficiently low ($\delta \leq (\tau - c)/\tau$), then the taxpayer is willing to claim all uncertain tax positions, even if the tax authority challenges all detected positions. Given that the taxpayer claims positions with both strong and weak support in this case, the tax authority is willing to challenge all uncertain tax positions it detects because the cost k of challenging a tax position is less than the expected tax revenue $\tau(1 - \sigma\pi)$.

If the probability that the tax authority identifies an uncertain tax position is sufficiently high ($\delta > (\tau - c)/\tau$), then there is no pure strategy equilibrium. For any cell in Table 1, one of the players prefers a different strategy if it knows the other player will use the strategy in that cell. The only equilibrium features mixed strategies in which each player makes the other player indifferent between that player's two pure strategies.

Behavior Inside the Program

We next consider an enhanced relationship program in which there is an understanding that the taxpayer will disclose its uncertain tax positions and the tax authority will conduct a focused audit. The taxpayer and the tax authority choose whether to enter into the enhanced relationship tax-compliance program. We make three significant assumptions regarding circumstances inside the program versus outside the program, all of which are consistent with our discussions with CAP personnel. First, the compliance costs incurred by the tax authority are lower inside the program. Increased taxpayer disclosure makes it less costly for the tax authority to determine whether a position is weak or strong inside the program. Second, the taxpayer bears an incremental cost inside the program, because the taxpayer must not only determine that a position is strong, but must also provide convincing disclosures to the tax authority. Third, a strong position is always recognized as strong upon review by the tax authority. The tax compliance process is less susceptible to error when the review occurs contemporaneously, because memories are fresh, key implementation personnel are still with the company, and the review process takes place in a cooperative environment.

In our model, every disclosed uncertain tax position is audited on a cooperative basis at cost z to the taxpayer and x to the tax authority. As before, these costs are per dollar of transaction. The taxpayer's disclosure cost (z) is incremental to the cost (c) of preparing the internal documentation

TABLE 2

Payoff Matrix Inside the Program

Report Aggressively	$\{-\tau Y + N(\sigma(\tau - c - z) + (1 - \sigma)[\tau(1 - \delta) - c]),$ $\tau Y - N(\sigma(\tau + x) + (1 - \sigma)[\delta k + (1 - \delta)\tau])\}$
Report Conservatively	$\{-\tau Y + N\sigma(\tau - c - z), \ \tau Y - N\sigma(\tau + x)\}$

Payoffs are $\{T, G\}$.

to support the position, whereas the tax authority's cost of reviewing the disclosed position (x) replaces the cost of challenging a position (k), and is less costly ($x < k$). We assume that the tax authority can credibly commit to examining every uncertain tax position that the taxpayer brings to its attention inside the program and that the facts provided in the disclosure of a strong position are sufficient to convince the tax authority that the position is strong. Thus, the tax authority will not challenge strong positions because its cost of doing so exceeds the expected benefit ($k > \tau(1 - \pi)$).[14]

We further assume that the incremental cost of disclosure, z, is less than the expected cost of not disclosing a strong position, so $z < \tau\delta(1 - \pi)$. Therefore, it is in the taxpayer's interest to disclose strong positions. In contrast, it is not in the taxpayer's interests to disclose weak positions because the information provided in the disclosure is sufficient to reveal to the tax authority that the position is weak. Essentially, we assume that the taxpayer cannot convince the tax authority that a weak position is strong and, thus, any disclosed weak position would be disallowed upon audit. Claimed undisclosed weak positions will be detected as part of the normal review process with probability δ and challenged at cost k. Because positions are disclosed if and only if they are strong, the tax authority correctly infers that any undisclosed position it discovers is weak.[15] The disclosure of strong positions has an indirect benefit to the tax authority, because it correctly infers that undisclosed positions are weak. This, in turn, deters the taxpayer from claiming tax benefits with weak support.

The payoffs associated with the enhanced relationship program are shown in Table 2. Because the government does not have a strategic choice to make within the program, there is only one column of payoffs in Table 2. We emphasize that the disclosure costs required inside the program, consisting of incremental cost z to the taxpayer and cost x to the tax authority, are only incurred with respect to strong positions, and the benefit to the taxpayer of disclosing a strong position exceeds the taxpayer's incremental cost, z. This ensures that the taxpayer discloses all strong positions.

Comparing the taxpayer's payoffs in the two cells in Table 2 shows that the taxpayer reports conservatively if and only if $\delta > (\tau - c)/\tau$. If weak positions are disclosed, then the tax authority recognizes them as weak and disallows them. If they are not disclosed, then the tax authority infers that discovered positions are weak and challenges them. Therefore, the taxpayer reports

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[14] Note that if outside the program the taxpayer could commit to only claiming benefits from positions with strong support and the tax authority could commit not to audit the positions it finds, then both players would be better off than in the program. However, there is no mechanism by which this type of commitment would be credible.

[15] When the taxpayer only claims strong uncertain tax positions, and therefore discloses all uncertain tax positions, the government observes an undisclosed uncertain tax position with zero probability in equilibrium. The equilibrium is supported by the off-equilibrium belief that an undisclosed uncertain tax position is weak.

aggressively when the detection probability δ is sufficiently low and conservatively when δ is sufficiently high.

Effects of the Program on Behavior

The enhanced relationship program affects the behavior of the taxpayer and tax authority in two significant ways. First, the program reduces the probability that the taxpayer takes uncertain tax positions with weak support when δ is sufficiently high. When δ is sufficiently high, the taxpayer never takes an uncertain tax position with weak support inside the program, whereas it takes such positions with probability $\beta^* < 1$ outside the program. However, when δ is sufficiently low, the taxpayer takes uncertain tax positions with weak support both inside and outside the program. Second, the program allows the tax authority to avoid challenging positions with strong support. The tax authority never audits strong positions inside the program, whereas it audits such positions outside the program with probability $\delta\alpha^*$ when $\delta > (\tau - c)/\tau$ and with probability δ when $\delta \leq (\tau - c)/\tau$.

Equilibria in the Two-Stage Game

In this subsection, we determine the circumstances under which both parties benefit from the program. We begin by describing the two-stage game. First, the taxpayer and the tax authority each choose whether to participate in the enhanced relationship audit program. If either player chooses not to enter the program, then play proceeds in accordance with the payoffs in Table 1, resulting in either the mixed-strategy equilibrium or the (Report Aggressively, Audit) equilibrium, depending on the probability that the tax authority detects an uncertain tax position (δ). If a taxpayer does not enter the enhanced relationship program, then the taxpayer does not disclose any transactions and therefore the cost z is not incurred.[16]

If both the taxpayer and the government choose to enter the program, then play proceeds in accordance with the payoffs in Table 2. As was the case outside the program, the probability that the tax authority detects an uncertain tax position (δ) determines whether the taxpayer claims an uncertain tax benefit when support for the position is weak.

We characterize the range of values of c and k for which both the taxpayer and the tax authority prefer to enter into the program. We focus first on the High Detection Rate Case, $\delta > (\tau - c)/\tau$. Comparing the taxpayer's payoff outside the program from Proposition 1 to its payoff inside the program from Table 2 when the taxpayer reports conservatively shows that the benefit to the taxpayer from entering the program is:

$$N\sigma[(\tau - c)(1 - \pi) - z]. \tag{1}$$

Comparing the tax authority's payoff outside the program from Proposition 1 to its payoff inside the program from Table 2 when the taxpayer reports conservatively shows that the benefit to the tax authority from entering the program is:

$$N\sigma\left[\frac{\pi\tau^2}{\tau - k} - \tau - x\right]. \tag{2}$$

Combining these benefits shows the effect of the program on social welfare in the High Detection Rate Case:

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[16] The decision whether to enter the program depends on the value of parameters that are common knowledge. Therefore, the interaction between the taxpayer and the tax authority is unaffected by the decision of either player not to enter the program.

$$N\sigma\left[\frac{k\pi\tau}{\tau - k} - x - z - c(1 - \pi)\right]. \tag{3}$$

We next discuss the Low Detection Rate Case, $\delta \leq (\tau - c)/\tau$. Comparing the taxpayer's payoff outside the program from Table 1 when the taxpayer reports aggressively and the tax authority audits detected uncertain tax positions to its payoff inside the program from Table 2 when the taxpayer reports aggressively shows that the benefit to the taxpayer from entering the program is:

$$N\sigma[\delta\tau(1 - \pi) - z]. \tag{4}$$

Comparing the tax authority's payoff outside the program from Table 1 when the taxpayer reports aggressively and the tax authority audits detected uncertain tax positions to its payoff inside the program from Table 2 when the taxpayer reports aggressively shows that the benefit to the tax authority from entering the program is:

$$N\sigma\left[\delta\Big(k - \tau(1 - \pi)\Big) - x\right]. \tag{5}$$

Combining these benefits shows the effect of the program on social welfare in the Low Detection Rate Case:

$$N\sigma[\delta k - x - z]. \tag{6}$$

The effect of the program on social welfare depends on the values of the parameters. We summarize the effects of changes in the model's parameters on the social benefits of the program in Table 3. All the effects are determined by differentiating Expressions (3) and (6).

A reduction in aggregate tax-compliance costs is a necessary condition for the taxpayer and tax authority to enter the program, but it is not sufficient because participation is voluntary and so each player must be better off inside the program to be willing to enter. We characterize the conditions under which the players enter into the program in Proposition 2.

Proposition 2:

(a) If $\delta \leq \frac{\tau - c}{\tau}$, then the taxpayer and the tax authority enter the program if and only if $k > \tau(1 - \pi) + \frac{x}{\delta}$;

(b) If $\delta > \frac{\tau - c}{\tau}$, then the taxpayer and the tax authority enter the program if and only if $k > \tau - \frac{\pi\tau^2}{\tau + x}$ and $c < \tau - \frac{z}{1 - \pi}$.
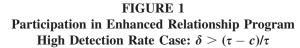
The proof is in Appendix A.

If the probability that the tax authority detects an uncertain tax position (δ) is sufficiently low, then the taxpayer will claim uncertain tax benefits with weak support both inside and outside the program. Because the incremental cost of disclosing a strong position (z) is less than the expected lost tax benefit in case a strong position is audited ($\tau\delta(1 - \pi)$), the taxpayer wants to enter the program when δ is sufficiently low. However, the tax authority prefers to enter the program if and only if its cost of audit outside the program, k, is sufficiently high, again because the program allows the tax authority to avoid this high audit cost.
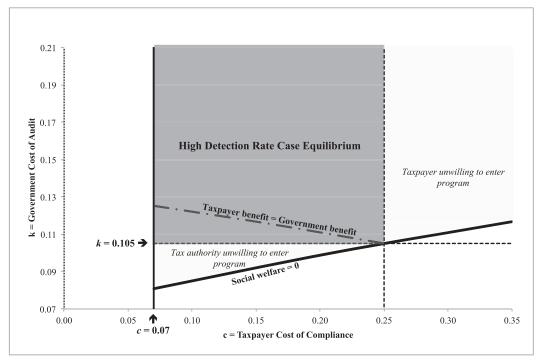
When δ is sufficiently high, the taxpayer prefers to enter the program if and only if its internal documentation cost (c) is sufficiently low. This occurs because outside the program, high taxpayer compliance costs reduce the equilibrium audit probability of the government. Intuitively, the tax authority chooses its audit probability in a mixed-strategy equilibrium to make the taxpayer indifferent between reporting conservatively and reporting aggressively. Holding the audit rate constant, an increase in c makes conservative reporting more attractive to the taxpayer, so the tax authority's equilibrium audit rate must be lower to keep the taxpayer indifferent between the two

TABLE 3
Comparative Statics on Total Social Benefit of Program

Parameter	Description	Varies by	High Detection Rate Case $(\delta > (\tau - c)/\tau)$ Effect	Low Detection Rate Case $(\delta \leq (\tau - c)/\tau)$ Effect, If Different
k	Cost of audit to the tax authority	Taxpayer: complexity and opacity	Increases: program allows the tax authority to avoid k	
c	Cost to the taxpayer of taking a position	Taxpayer: industry, size, and internal documentation requirements	Decreases: tax authority's audit rate α is decreasing in c, which decreases compliance costs outside the program	No effect: change in c has no effect on the tax authority's audit rate in the Low Detection Rate Case
x	Cost of program to the tax authority	Taxpayer: complexity and opacity	Decreases: increases cost of program to authority	
z	Cost of disclosure to the taxpayer	Taxpayer: industry, size, and internal documentation requirements	Decreases: increases cost of program to taxpayer	
π	Probability a strong position is sustained upon audit	Environmental: various jurisdictional systems (i.e., legal, political)	Increases: taxpayer's probability of reporting aggressively β is increasing in π, which increases compliance costs outside the program	No effect: change in π has no effect on taxpayer reporting strategies in the Low Detection Rate Case
τ	Statutory tax rate	Environmental: tax system	Decreases: affects both players' strategies outside the program; an increase in τ decreases total tax-compliance costs outside the program	No effect: change in τ has no effect on taxpayer reporting strategies in Case 2
σ	Probability a tax position is strong	Environmental: industry, size	Ambiguous: σ has a multiplicative effect—its effect depends on whether the program is beneficial	
δ	Probability the tax authority detects an uncertain tax position	Environmental: disclosure system (tax, financial, etc.)	No effect	Increase: program allows the tax authority to avoid expected audit cost k for detected strong positions

FIGURE 1
Participation in Enhanced Relationship Program
High Detection Rate Case: $\delta > (\tau - c)/\tau$

This figure identifies combinations of taxpayer cost of compliance, c, and government cost of audit, k, for which both the taxpayer and the tax authority are willing to enter the enhanced relationship program in the High Detection Rate Case. We assume the following: the statutory tax rate, τ, is 0.35; the probability a position is sustained upon audit, π, is 0.80; the probability that a position is strong, σ, is 0.50; the probability that an undisclosed position is detected upon audit, δ, is 0.80; the cost of taxpayer disclosure, z, is 0.02; and the cost of the program to the tax authority, x, is 0.05.

reporting choices. As a result, an increase in c reduces the taxpayer's expected payoff more inside the program than it does outside the program and, thus, the attractiveness of the program itself is decreasing in c. Because we characterize c, the cost per dollar of tax benefit claimed, as varying by taxpayer along dimensions such as size, industry, and internal documentation requirements, economies of scale suggest that larger firms are more likely to participate in the program than smaller programs, which is consistent with the evidence provided in Beck and Lisowsky (2012). The tax authority prefers to enter the program if and only if its cost of audit outside the program (k) is sufficiently high, because the program allows the government to avoid this high audit cost.

Figure 1 illustrates the player's actions and payoffs as the cost parameters c and k vary in the High Detection Rate Case. The values of the other parameters are $\tau = 35$ percent, $\pi = 80$ percent, $\sigma = 50$ percent, $\delta = 80$ percent, $z = 1/50$, and $x = 1/20$. The tax rate τ is the U.S. federal corporate income tax rate. The other parameter values are consistent with our assumed parameter restrictions, and are chosen to illustrate the possible outcomes that can arise. Inferences from the figures below

are robust to significant changes in these parameter values, but we do not consider those parameter values for which the players have trivial strategic choices.[17]

The range of parameter values in Figure 1, $c < 0.35$ and $0.07 < k < 0.21$, reflects the parameter constraints $c < \tau$ and $\tau(1 - \pi) < k < \tau(1 - \sigma\pi)$. The horizontal boundary at $k = 0.105$ reflects the value of k at which the tax authority is indifferent to entering the program; the tax authority is willing to enter the program if $0.105 \leq k < 0.21$. The vertical boundary in Figure 1 at $c = 0.07$ separates the High Detection Rate Case from the Low Detection Rate Case. Inside the program, the taxpayer reports conservatively when $c > 0.07$ and aggressively when $c \leq 0.07$. The vertical boundary at $c = 0.25$ is the value of c at which the taxpayer is indifferent to entering the program; the taxpayer is willing to enter the program if $0.25 \leq c < 0.35$.

Figure 2 illustrates the players' strategies and payoffs in the Low Detection Rate Case. We use the same parameter values in Figure 2 as in Figure 1.
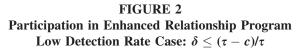
The taxpayer is willing to enter the program for any value of c depicted in Figure 2, i.e., if $0 \leq c \leq 0.07$. The horizontal boundary at $k = 0.1325$ reflects the value of k at which the tax authority is indifferent regarding whether to enter the program; the tax authority is willing to enter the program if $0.1325 \leq k < 0.21$. Note that the range of values of k for which the government prefers to enter the program is greater in the High Detection Rate Case (Figure 1) than in the Low Detection Rate Case (Figure 2). This occurs because in the High Detection Rate Case, the program has both a direct benefit to the government in the form of lower audit costs ($x < k$), and an indirect benefit in that the taxpayer is deterred from taking any weak positions. Because the program only has a direct benefit in the Low Detection Rate Case, the threshold value of k for which the program is attractive to the tax authority is higher in the Low Detection Rate Case than in the High Detection Rate Case.
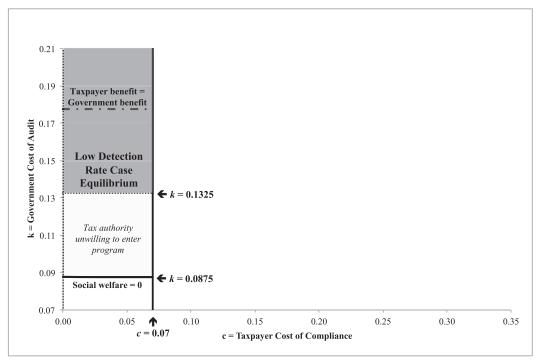
We next consider how the benefits from the program are divided between the taxpayer and the government in the High Detection Rate Case. The taxpayer is indifferent between being in or out of the program along the vertical line in Figure 1 at $c = 0.25$, so all the benefits go to the government at that point. Similarly, the government is indifferent between being in or out of the program along the horizontal line in Figure 1 at $k = 0.105$, so all the benefits go to the taxpayer in that case. The two parties share the benefits equally along the dashed line, with more benefits going to the taxpayer below the dashed line and more benefits going to the government above the line. The most important difference between the High Detection Rate Case and the Low Detection Rate Case regarding how the benefits to the program are shared is that the taxpayer always benefits from entering the program in the Low Detection Rate Case, so the government never obtains all of the benefits. The lower the value of k, the greater is the share of the benefits that go to the taxpayer. As in the High Detection Rate Case, the taxpayer receives all of the benefits at the lowest value of k for which the government enters the program.

The solid "Social welfare = 0" line shows where the aggregate net benefits of the program are zero. In Figure 1, this line is tangent to the area in which both players enter the program at the point $c = 0.25$ and $k = 0.105$. In Figure 2, this line is at $k = 0.0875$. In each figure, there is at least one region with values of k greater than the solid "Social welfare = 0" line for which program participation by both parties is not attainable even though the aggregate payoffs from the program are positive. In Figure 1, in the region above the "Social welfare = 0" line for which $0.07 \leq c \leq 0.25$ and $k \leq 0.105$, the tax authority prefers not to enter the program even though aggregate payoffs from doing so are positive. This occurs because the value of k is so low in this region that, outside the program, the taxpayer reports aggressively quite infrequently

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[17] For example, as σ approaches 100 percent, the range of k values for which the tax authority has a nontrivial auditing decision vanishes. Similarly, if z is too high, then the taxpayer would never want to enter the program.

FIGURE 2
Participation in Enhanced Relationship Program
Low Detection Rate Case: $\delta \leq (\tau - c)/\tau$

This figure identifies combinations of taxpayer cost of compliance, c, and government cost of audit, k, for which both the taxpayer and the tax authority are willing to enter the enhanced relationship program in the Low Detection Rate Case. We assume the following: the statutory tax rate, τ, is 0.35; the probability a position is sustained upon audit, π, is 0.80; the probability that a position is strong, σ, is 0.50; the probability that an undisclosed position is detected upon audit, δ, is 0.80; the cost of taxpayer disclosure, z, is 0.02; and the cost of the program to the tax authority, x, is 0.05.

(i.e., β is low), which is beneficial for the tax authority. Furthermore, in the region for which $c \geq 0.25$ and k exceeds the Social Welfare line, the taxpayer prefers not to enter the program even though aggregate payoffs from doing so are positive. In this region of sufficiently large values of c, the rate at which detected uncertain tax positions are audited is so low outside the program (i.e., α is low) that the taxpayer is unwilling to enter the program. In Figure 2, the taxpayer is always willing to enter the program, but the government is unwilling to enter when $0 \leq c \leq 0.07$ and $k \leq 0.1325$. The cost of auditing is so low in this case that the program is unattractive to the government.

Effect of Changes in Detection Probability

We find that δ, the tax authority's ability to detect uncertain tax positions from a review of the return, is an important factor in determining how an enhanced relationship program affects behavior

and whether both the taxpayer and the government find it attractive. This finding is particularly relevant because several recent changes to taxpayer disclosure rules in the U.S. have increased the ability of the IRS to detect uncertain tax positions. Beginning in late 2004, large corporate taxpayers were required to file a detailed reconciliation of book income to taxable income on Schedule M-3 of their U.S. tax return. FIN 48 financial reporting rules for uncertain tax positions, effective in late 2006, and the new Schedule UTP required for corporate taxpayers in 2010, also served to increase required disclosures related to uncertain tax positions.[18] This subsection investigates how the actions of the taxpayer and the tax authority change as the parameter δ increases.

When δ is sufficiently close to zero, the taxpayer reports aggressively and the tax authority audits all detected uncertain tax positions (Low Detection Rate Case). When δ is low, the program does not deter the taxpayer from taking weak positions and not disclosing them. The taxpayer and tax authority prefer not to collectively spend $x + z$ on every strong position in order to avoid the audit cost of δk when δ is low. As δ increases, the savings from the program increase. As Expressions (4) and (5) indicate, the attractiveness of the program to both the taxpayer and the tax authority increases in δ when $0 \leq \delta < (\tau - c)/\tau$.

An increase in δ that moves the boundary between the High and Low Detection Rate Cases closer to zero expands the High Detection Rate Case space and shrinks the Low Detection Rate Case space. This increases the range of k over which the government is willing to participate because, as noted above, the range of values of k for which the government prefers to enter the program is greater in the High Detection Rate Case than in the Low Detection Rate Case. Comparing Expressions (2) and (5) shows that the benefit to the tax authority from entering the program is higher in the High Detection Rate Case than in the Low Detection Rate Case. Furthermore, comparing Expressions (1) and (4) shows that the benefit to the taxpayer from entering the program is also higher in the High Detection Rate Case than in the Low Detection Rate Case. We conclude that the recent increases in the disclosure of uncertain tax positions in the United States have increased the attractiveness of the program for both taxpayers and the Internal Revenue Service. More generally, we expect the detection rate to be an important factor in identifying jurisdictions that establish or expand enhanced relationship tax-compliance programs.

V. CONCLUSION

This study investigates the conditions under which an enhanced relationship tax-compliance program makes both the taxpayer and the government better off, as well as how any mutual benefits are likely to be shared. We develop a model of taxpayer and tax authority behavior inside and outside of an enhanced relationship program. To determine when these programs are attractive to both parties, we compare the payoffs to both parties inside an enhanced relationship program to the payoffs to both parties outside of the program. We find that the program has two effects on behavior. First, the program has a deterrent effect in that participation in the program decreases the frequency with which taxpayers claim uncertain tax benefits with weak support. Second, the disclosure required by the program enables the tax authority to avoid challenging positions for which the cost of audit outweighs the expected benefit. The tax authority's pledge not to challenge positions after the return is filed is self-enforcing in equilibrium.

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[18] FIN 48 reserves are reported in aggregate and the empirical literature is inconclusive regarding the informativeness of these disclosures. However, we note that FIN 48 disclosures provide information about the risk associated with a firm's tax positions that was generally not disclosed by firms previously. Further, these disclosures likely work in conjunction with Schedule M-3 and Schedule UTP to increase the IRS's ability to detect uncertain tax positions.

We find that when the tax authority is able to identify uncertain positions with sufficiently high probability and the cost of the program is sufficiently low, the taxpayer will enter the enhanced relationship program, claim only strong uncertain tax positions, and disclose these positions truthfully to the tax authority. Therefore, when detection rate is high, the taxpayer's pledge to disclose all uncertain tax positions is self-enforcing in equilibrium. If the cost of the program outweighs the benefits to the taxpayer, then the taxpayer will not enter the program and a unique mixed-strategy Nash equilibrium results. The taxpayer randomizes between claiming all available uncertain tax positions and claiming just strong uncertain positions, and the tax authority randomizes between auditing and not auditing detected uncertain tax positions.

When the probability that the tax authority is able to identify uncertain positions is sufficiently low, the taxpayer will claim both weak and strong uncertain tax positions because the threat of audit has no deterrent effect. If the taxpayer chooses to enter the program, then it will claim both weak and strong positions, but it will only disclose strong positions to the tax authority. Despite taxpayer noncompliance with respect to disclosing all uncertain tax positions, there are conditions under which the program is still beneficial to the tax authority.

By modeling the mechanisms through which enhanced relationship programs can reduce total tax-compliance costs, we are able to specify conditions under which entering the program is beneficial to both the tax authority and the taxpayer, how any mutual benefits may be split between the taxpayer and the tax authority, and which strategy the taxpayer should use if it does enter the program. We find that, despite the counterintuitive nature of a cooperative program in the context of an inherently adversarial relationship, the program is mutually beneficial in many cases, even if neither party can be punished for not fulfilling its pledge. Our findings suggest that a cooperative approach to otherwise contentious negotiations can be socially beneficial, similar to results from experimental research indicating that cooperative tactics used by financial statement auditors can yield more conservative financial statements (Sanchez et al. 2007; Hatfield et al. 2008).

Our research also informs tax authorities considering establishing or expanding enhanced relationship programs by demonstrating that an increased ability to detect uncertain tax positions, such as through increased disclosure requirements related to uncertain tax positions, makes enhanced relationship tax-compliance programs beneficial for both taxpayers and the tax authority. We suggest that future research consider empirically testing our findings, for example by investigating how cross-sectional and time-series differences in detection probability affect program adoption and participation.

Our study assumes that managers strive to minimize the sum of expected taxes and tax-compliance costs. To the extent that an enhanced relationship program has other consequences, such as financial reporting effects of uncertain tax positions, our approach understates the benefits of these programs. We also assume that inside the program, the tax authority is always able to distinguish strong from weak positions, i.e., the taxpayer can always convince the tax authority that a strong position is strong and can never convince the tax authority that a weak position is strong. If errors occur inside the program, then participation in the program will be less attractive. Furthermore, we have focused on parameter values that generate nontrivial strategic choices. Our study does not apply to other settings, such as those in which audit costs are so high that the threat to audit is not credible.

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APPENDIX A

Proof of Proposition 1

(a) When $\delta \leq (\tau - c)/\tau$, the taxpayer has a dominant strategy of reporting aggressively. The best response on the part of the tax authority is to audit all detected uncertain tax positions because $k < \tau(1 - \sigma\pi)$.

(b) When $\delta > (\tau - c)/\tau$, there is no pure strategy equilibrium because for any cell in Table 2, one of the players has an incentive to change its strategy. If the government audits detected uncertain tax positions with probability $\beta^* = \sigma[k - \tau(1 - \pi)]/[(1 - \sigma)(\tau - k)]$, then the taxpayer is indifferent between reporting aggressively and reporting conservatively. The assumptions regarding the cost of audit to the government, that $\tau(1 - \pi) < k < \tau(1 - \sigma\pi)$, ensure that β is between 0 and 1. If the taxpayer reports aggressively with probability $\alpha = (\tau - c)/(\delta\tau)$, then the government is indifferent between auditing and not auditing uncertain tax positions. Our assumption that $c < \tau$ ensures that $\alpha > 0$. The fact that $\delta > (\tau - c)/\tau$ ensures that $\alpha < 1$. The expected payoffs are derived from the equilibrium strategies and the payoffs in Table 1. QED

Proof of Proposition 2

(a) When $\delta \leq (\tau - c)/\tau$, the taxpayer reports aggressively both inside and outside the program, and the government audits all discovered undisclosed uncertain tax positions both inside and outside the program. The taxpayer's benefit from entering the program in (4) shows that the taxpayer prefers to enter the program for all parameter values because $z < \tau\delta(1 - \pi)$. The tax authority's benefit from entering the program in (5) shows that the tax authority prefers to enter the program if and only if $k > \tau(1 - \pi) + x/\delta$.

(b) When $\delta > (\tau - c)/\tau$, the taxpayer reports conservatively inside the program, and the taxpayer and the government play the mixed strategy characterized in Proposition 1 outside the program. The taxpayer's benefit from entering the program in (1) shows that the taxpayer prefers to enter the program if and only if $c < \tau - z/(1 - \pi)$. The tax authority's benefit from entering the program in (2) shows that the tax authority prefers to enter the program if and only if $k > \tau - \pi\tau^2/(\tau + x)$. QED